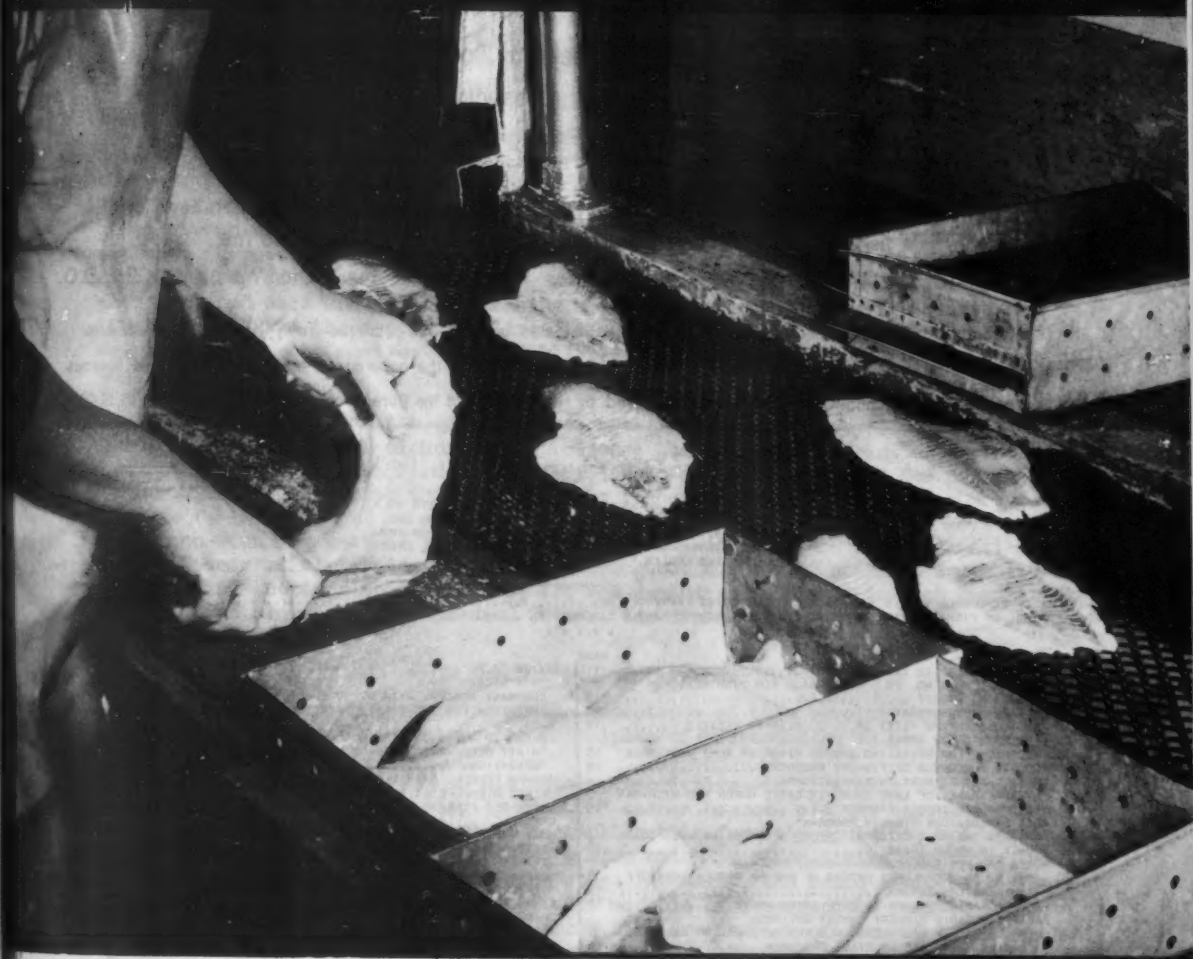


COMMERCIAL FISHERIES REVIEW



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COMMERCIAL FISHERIES REVIEW



A REVIEW OF DEVELOPMENTS AND NEWS OF THE FISHERY INDUSTRIES
PREPARED IN THE BRANCH OF COMMERCIAL FISHERIES

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USE OF ECHO SOUNDERS IN THE FISHERIES

By Ewing Lawrence, Jr.*

INTRODUCTION

Since early times man has been interested in fish. Almost as long as he has been interested he has taken fish commercially to sell or trade to others, but the tools of the commercial fisherman have changed little in recorded history. True, bone hooks have long since been replaced by steel. Fabric netting has in some cases given way to nylon or other synthetics. "Elbow grease" has in some instances been replaced by powered net hoists. But there have actually been few significant or revolutionary advances. Of course, gasoline or Diesel engines for motive power have also replaced oars and sails in fishing boats and automatic power reels have been introduced to aid the deep-water line fisherman, but of all the advances in the fishery industries, the most outstanding has been the introduction and use of echo-sounding gear.

Echo-sounding gear has given the commercial fisherman new eyes—eyes that see through water, clear or cloudy, to depths once thought unfathomable. "Underwater Radar," "Electronic Fish Finder," "Underwater Road Map," are only a few of the familiar nicknames given to this equipment by fishermen.

Echo-sounding gear is revolutionizing the methods of operation of almost all types of commercial fishing. Fishermen throughout the world, at first somewhat cautious in accepting this new idea, are now demanding this gear in such quantities that manufacturers are hard pressed to meet the demand.

PRINCIPALS OF ECHO SOUNDING

For a thorough understanding of the importance of this revolutionary gear, it is necessary first to understand the principles of echo sounding as now employed.

Echo sounding—the name is ultimately descriptive—is literally the function of measuring the depth of water by means of echoes bounced off the bottom and timed in their passage. The equipment to accomplish this function could be, and once was, simply an audible sound-making device, a stop watch or other timing mechanism, and a sound amplifier for reception of the echo. Actually, the sound employed for this purpose may be of any frequency within the audible or superaudible range. Years of research and practice, however, have shown that frequencies of from 20 to 50 thousand cycles per second are best suited for this purpose. Fortunately, sound frequencies anywhere within the sonic and ultrasonic range have the characteristic of traveling at essentially the same speed in the same medium and of being affected but little by changes in the degree of salinity or temperature of the water.

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NOTE: THIS ARTICLE IS AN ABSTRACT OF A PAPER ("THE USE OF ECHO SOUNDERS IN FISHERIES") PRESENTED AT THE FISHERY EXPLORATION AND TECHNOLOGY SESSION OF THE GULF AND CARIBBEAN FISHERIES INSTITUTE HELD ON NOVEMBER 16, 1950, AT MIAMI BEACH, FLA.

To be scientific, however, it must be admitted that the changes in the character of the water do cause inaccuracies. Actually, the speed of sound in any liquid is given by the relation: velocity in meters per second = the square root of k/p (where k is the adiabatic bulk modulus of elasticity, and p is the density of liquid). In fresh water at a temperature of 8°C . (46.4°F .), this velocity is 1,427 meters (4,681.7 feet) per second. In sea water of 35-percent salinity, the relation becomes: velocity in feet per second equals $4,756 (13.8t + 0.12t^2)$ where t is the temperature of the water). At 8°C . (46.4°F .) the velocity from this relation is 4,858.7 feet per second. It will be noted that the difference in velocity between fresh water and salt water at the same temperature is small enough to be of interest only to surveyors and of no importance to the commercial fisherman. As most echo sounders are designed for use in sea water and not provided with compensators for changes in density or temperature, the maximum error of approximately 177 feet per second (only 3.6 percent) is encountered only by the unusual fishing boat which may operate in both sea water and fresh water.

Incidentally, some time ago, a rumor was circulated to the effect that the energy emitted from some echo sounders was harmful or disturbing to fish. This rumor was without foundation. In fact, there is conclusive evidence that fish are oblivious to energies of the strength and frequency emitted by most echo-sounding devices.

Present-day mechanisms for producing the sound, timing the passage, and receiving and indicating the echo are generally combined into a single-unit system. The timing, which is the heart of the mechanism, is accomplished by means of a constant speed motor drive which carries the transmitter keying contact and some means for producing an indication of the echo, and relating the time of reception to the time of transmission along a graduated scale. An indicating echo sounder commonly employs a revolving disc to which is attached an electric lamp. At the zero position of the disc, the transmitter is energized and the sound is emitted from the underwater sound-head or oscillator mounted in the hull. When the echo is received and amplified, it causes a flash in the electric lamp which has meanwhile been rotated to an angular position corresponding to the elapsed time. The indicator is so constructed that the flash of light from the lamp is immediately comparable to a graduated scale marked in units of depth so that a direct reading of depth is obtained. To obtain maximum benefit and utility from such an indicator it would be necessary to observe the flashes continuously and to record the data thus obtained in the form of a graph. This would require two operators, one to observe and one to record. For this reason the depth indicator has limited application except for purely navigational purposes, as a single operator finds it impossible to observe the indications continuously and to visualize the true contour or other characteristics of the surfaces from which echoes are received.

A recording echo sounder employs the same basic principals as the indicator, but produces its data as a permanent (or in some machines semi-permanent) mark on a graduated chart, thus doing automatically and instantaneously the complete job which might be done by an indicator and two highly efficient operators. The recorder completes the job only started by the indicator, and produces a complete picture, in profile, of the bottom contour or of the size, shape, and density of reflective matter between the surface and the bottom. There is hidden importance in this last statement as it is from this ability that the name "Fish Finder" and a whole new field of application has arisen.

OPERATION OF RECORDING ECHO SOUNDERS

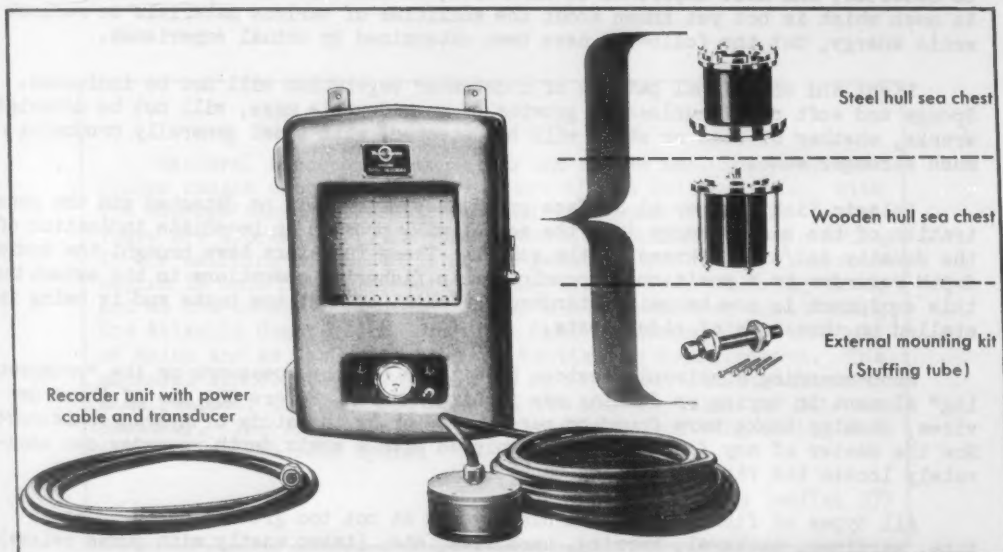
All technical details and references to actual application and installations of recording and direct-reading echo sounders which follow refer in most cases to

one manufactured by a West Coast aviation corporation. It is used as an example in order to clarify the operations of such devices.

The direct-reading echo sounder produced by the West Coast company produces its record on dry, graduated paper by means of a moving wire stylus through which the amplified echo is passed to remove, electrically, the light gray coating from the surface of the record paper so that the black of the graphite-bearing paper bulk shows through. (However, devices manufactured by other companies use inking pens or wet paper.) The recording and direct-reading echo sounder under discussion produces a very detailed record as the amount of surface coating removed is dependent upon the strength of the echo which, at a given depth, is dependent upon the hardness and compactness of the bottom or other reflective surfaces. Sonic energy has the ability to penetrate most matter to a greater or lesser extent, and echoes are obtained from the depth of the penetration, descending in strength with the depth of penetration. Thus, by the darkness of the initial echo indication and by the fine degrees of shading resulting from the penetrating energies, the record produced gives an accurate indication of the hardness or compactness of the bottom. It is, therefore, possible to distinguish readily between rock, sand, and mud. With some experience and familiarity with the minute peculiarities of a particular machine, it is possible to go further and determine the approximate consistency of mixed bottoms or to detect small patches of harder material embedded in soft mud or sand, etc.

USES OF A SONIC DEPTH RECORDER IN MARINE AND FISHING OPERATIONS

As a navigational aid, the depth recorder is extremely valuable. By following the contour of the bottom, grounding and stranding may always be avoided, and pinpoint positioning may be obtained by comparing the record graph with navigational charts. Thus, a depth recorder may be considered a necessity for navigating shoal



TYPICAL 100-FATHOM RANGE DEPTH RECORDER. (ILLUSTRATION COURTESY OF PACIFIC DIVISION, BENDIX AVIATION CORP.)

waters, particularly in uncharted areas or areas unfamiliar to the boat's navigator. The bottom contour is shown in great detail—the presentation of bottom irregularities being most faithful and dependent only on the number of soundings per lineal unit of bottom covered and the scale range of the device. For the utmost in accuracy, the depth recorder used should take the maximum possible number of soundings per lineal unit of bottom covered and should have a scale range not exceeding the maximum depth of interest, so as to obtain greatest enlargement of contour. Reference to soundings per lineal unit may be misleading as this will actually depend only upon the lineal speed of the boat. The rate of sounding is limited by the scale range as sufficient time must be allowed between the soundings for passage of sound from the soundhead to the bottom and return, and for recovery of the electronic circuits. Thus, soundings cannot be emitted more frequently than given by the relation: soundings per second = $v/2d$ (where v is the velocity of the sound and d is the depth in feet). Assuming a nominal velocity of 4,800 feet per second, it may be seen that for a depth range of 400 fathoms, soundings cannot be taken more often than one per second, as it would take approximately one second for the sound to travel to the bottom and return. Actually, the recovery time of electronic circuits, the necessity for avoiding any possibility of overlap, and certain mechanical considerations dictate that soundings be taken at from $1/4$ to $1/2$ of this maximum rate. As the lineal distance traveled by the boat between soundings may be sufficient to result in a serious loss of bottom detail, it is important that, when ultimate in bottom detail is required, the boat be held to a low speed. For average use, however, sonic depth recorders have been designed to give sufficient detail at average boat speeds of from 8 to 15 miles per hour.

As has already been mentioned, the sonic depth recorder has the ability to detect and present the evidence of any reflective matter suspended in the water between the soundhead and the bottom. Thus, heavy masses of seaweed or suspended debris may be detected, and most important to fisheries, schools of fish may be detected. There is much which is not yet known about the abilities of various materials to reflect sonic energy, but the following have been determined by actual experience.

Light and occasional patches of underwater vegetation will not be indicated. Sponge and soft coral, unless in growths of considerable mass, will not be detected. Wrecks, whether of wood or steel will be detected, with steel generally producing a much stronger echo.

Pelagic fish, either at surface or in deep water will be detected and the penetration of the sonic energy into the school will provide an immediate indication of the density and/or thickness of the school. These functions have brought the sonic depth recorder to a position of prominence in fisheries operations to the extent that this equipment is now becoming standard equipment on most new boats and is being installed on thousands of older boats.

Echo-sounding electronic devices have taken out the guesswork or the "prospecting" element in trying or finding new fishing grounds. Before the use of these devices, fishing banks were found by pure chance or by the study of hydrographic charts. Now the master of any fishing vessel equipped with a sonic depth recorder can accurately locate the richest fishing banks.

All types of fish that school closely and at not too great a depth, such as tuna, sardines, mackerel, herring, anchovies, etc. (taken mostly with purse seines) can be located with a sonic depth recorder. In addition, the tonnage of each particular school can be closely estimated. Since the bottom conditions that will be encountered can be determined before beginning a seine set, such a device will serve as insurance against damaged gear and will aid in making bigger catches possible.

Because gill-net fishermen find that by placing their nets along the edge of a ledge at a certain specified depth that catches are considerably larger, a sonic depth recorder makes it possible for this type of fisherman to determine exactly where a ledge is and in which direction it runs, regardless of visibility. The device enables the fisherman to spot his gear near the edge of the ledge and assures him that it will be set where he wants it.

Trawlers have found that generally it is often considered not economically feasible to fish where unknown bottom conditions exist because serious damage or loss of trawl nets coupled with the loss of time involved can make this type of fishing a losing proposition. However, a sonic depth recorder should aid the trawler captain to determine bottom conditions. This will aid him to avoid obstructions and to fish the types of bottom most likely to contain fish. It is also reported that an experienced user of a sonic depth recorder aboard a trawler can frequently spot fish on the device several minutes before his trawl reaches them and, if necessary, he can change his course so that his net will pass through the heaviest concentration.

Sonic depth recorders have applications and uses also in trolling, set-line fishing, the shrimp fishery, and live-bait fishing. As the use of sonic depth recorders in the fisheries increases, new applications or variations of older applications are being and will be discovered.



ATLANTIC COAST MACKEREL PURSE SEINE

Mackerel (*Scomber scombrus*) is one of the most important food fishes caught along the Eastern Coast of the United States, with the average annual production amounting to about 35,000,000 pounds. There are approximately 100 vessels and 1,000 fishermen participating in the catching of these fish. In general, the mackerel season begins in late March, or early April, in the Chesapeake Bay area, and as the season advances, catches are made further north along the Atlantic Coast. June and July find the mackerel in the Gulf of Maine and as far north as Nova Scotia and Newfoundland. The mackerel schools begin to break up in September but occasionally some reappear off Cape Cod where a few may be taken as late as December. The fish then disappear until the following spring when they repeat the same cycle.

—Fishery Leaflet 373

CONTROL OF FISH SPOILAGE BY ICING AND FREEZING

By H. E. Crowther*

INTRODUCTION

The average person who handles fish and shellfish, from the fisherman on the boat to the clerk in the retail store, knows through experience that in order to keep these products from spoiling some form of refrigeration must be used. But it is probably safe to say that 80 percent of the people who chill or freeze fish and shellfish do not know why the lowering of temperature preserves these products. Perhaps, if those concerned did know, they would be much more careful with icing and freezing operations, which are of paramount importance to assure quality products.

The information in this article is not entirely new. It is known by a number of people, but I am afraid that most of them are technologists—and technologists themselves handle very little fish. Therefore, this brief description of the spoilage processes of fish at various temperatures is presented with the view in mind that wider dissemination of this information will aid in bringing out the need and importance of properly chilling or freezing fishery products in order to preserve the inherent excellent quality of these products. There is no doubt that the direct results will be increased appreciation and consumption of fish and shellfish, and the benefits of these to the fishing and allied industries are self-evident.

PRINCIPAL CAUSES OF FISH SPOILAGE

The principal causes of fish spoilage are bacterial action and autolysis. Although bacteria are extremely small and may be seen only with the aid of a microscope,



PREPARING FISH FILLETS FOR FREEZING IN ONE-POUND UNITS IN A WEST COAST FISH-PROCESSING PLANT.

they can produce almost unbelievable results. A single bacterium can do little by itself—the power of bacteria lies in their number, for they grow or multiply at an unbelievable rate. Bacteria grow not by becoming larger but by multiplication. Under ideal growth conditions, bacteria multiply about once every 20 minutes. At this rate one bacterium would produce 8 in one hour, 262,144 in 6 hours, and about 68,000,000,000 in 12 hours. This phenomenal growth of bacteria is probably the reason that prompted Dr. L. B. Jensen of Swift and Co. to state that food-packing operations are likened to a race between the micro-organism and man to see who gets the food first. Unfortunately, there have been too many times when the microbes have won the race by an obvious margin, but the fish dealers have not conceded defeat. The secret of preservation is to make sure that favorable conditions for bacterial growth, such as high temperatures, do not exist.

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NOTE: THIS ARTICLE IS BASED ON A PAPER ("THE FREEZING OF FISH") PRESENTED AT THE FISHERY EXPLORATION AND TECHNOLOGY SESSION OF THE GULF AND CARIBBEAN FISHERIES INSTITUTE HELD ON NOVEMBER 16, 1950, AT MIAMI BEACH, FLORIDA.

Cooperating with bacteria in the spoilage processes is autolysis or self-digestion of the flesh. Autolysis is simply the action of the enzymes of the living flesh which continue their work after the fish or shellfish dies. When the fish is living, these enzymes are prevented from attacking the living cells, but when the fish dies the protective system breaks down and the enzymes begin their softening action on the flesh. Bacterial action appears to be much more important than autolysis in the spoilage of fishery products.

Practically all foods contain bacteria, and many foods, such as meat and milk, may contain large numbers of them, but very few foods are in such an unfortunate position as fish and shellfish.

First of all, refrigeration, the one satisfactory method of keeping most food products fresh, is partially ineffective in the fisheries. Because the unusual types of bacteria which contaminate fish and shellfish are resistant to ordinary refrigeration temperatures, the "keeping time" of these products under non-freezing refrigeration is relatively short. For this reason it is necessary to take full advantage of all that is known about the preservation of fish by refrigeration.

SOURCE OF BACTERIA FOUND IN FISH

In order to understand something about the unseen enemy we are fighting, let us trace briefly where these bacteria come from and how they attack fish and shellfish. Most of the fish-spoiling bacteria are brought into the packing plant on the fish themselves. The heaviest concentrations are in the slime and in the entrails of the fish. Of course, other bacteria are picked up in the handling process from the hands of men, etc., but these are not too important for they grow very slowly under ordinary refrigeration. The bacteria of sea origin are much more hardy for they are accustomed to living in cold sea water and can grow rapidly at temperatures not very much above freezing.

Knowing where the troublesome bacteria come from—the next problem is to determine how they attack the fish and in what areas. On the skin surface and in the entrail cavity of fresh fish there are millions of spoilage bacteria, but the meat itself is sterile. The maximum bacterial growth is in the lining of the entrail cavity and in the blood vessels under the backbone. If there is a break in the skin or the cavity lining, the bacteria will quickly invade the meat. But even though the bacteria may not penetrate the meat, they still can spoil the fish by producing an objectionable, strong, "fishy-smelling" substance, such as trimethylamine, which is easily diffused into the meat or muscle.

CONTROL OF FISH SPOILAGE BY USE OF ICE

If the spoilage bacteria can grow at refrigeration temperatures, how can we control spoilage? Through work which has been carried out by Castell (1949) in Canada, we know that the temperature at which fish are stored is very important. For most common foods, storage at 37° F. is almost as effective as storage in crushed ice at 32° F, for the bacteria present will not grow at either temperature. With fish this is not the case. Experiments have shown that cod fillets stored at 32° F. kept twice as long as fillets stored at 37° F.—twice the "keeping time" with a change in temperature of only 5 degrees. This would not be important if fishing boats and plants carefully iced their fish in plenty of finely crushed ice—but unfortunately this is not always the case. Temperatures higher than 35° and 40° F. are not uncommon

1/ CASTELL, C. H. (ATLANTIC FISHERIES EXPERIMENTAL STATION, HALIFAX, N. S.) FISHERIES RESEARCH BOARD OF CANADA, PROGRESS REPORTS OF ATLANTIC COAST STATIONS, NO. 44, 8-12 (JANUARY, 1949).

for iced fish in the hold of fishing vessels. Ice will bring the temperature of fish down to 32° F. or below, but to obtain these temperatures care is required in packing the fish in ice. A shovelful of ice on top of a box of fish is not sufficient. The fish must be surrounded by ice. According to a British scientist who is now working on the preservation of fish in ice, temperatures as low as 26° F. may be obtained if the fish are properly iced. He found the average temperature to be between 30° F. and 31° F. However, to date these results have not been verified.

CONTROL OF FISH SPOILAGE BY FREEZING

This brings us to the freezing point of fish—25° to 28° F. Below this temperature our problem changes somewhat. As in the non-freezing temperature range, the bacterial spoilage processes continue to slow down as the temperature of the frozen fish is lowered, but other problems appear. First of all, much more is expected of frozen fish than of iced fish. Instead of aiming at a keeping time of several days, the frozen fish are expected to keep for many months. From the results of experimental work and from practical experience it is known that in order to maintain quality in frozen fish a storage temperature of 0° F. or lower must be maintained, and the lower the storage temperature the better the fish. Fish stored at -20° F. will be of noticeably higher quality than those stored at 0° F. Unfortunately, many of the present commercial freezers are not equipped to economically maintain temperatures as low as -15° F. to -20° F. However, there is now a general trend in designing new frozen-storage warehouses to provide for these low temperatures.

Not long ago there were two generally accepted theories regarding the freezing of fish. One was that the speed of freezing is the most important factor in maintaining the quality of frozen fish. The second was that one of the principal causes of deterioration in frozen fish during storage is fluctuation in temperature. Both of these theories have now been cast aside.

In regard to speed of freezing, it was believed that the more rapid the freezing - the better the product, because the small crystals formed by fast freezing would not penetrate the cell walls. It was reasoned that the large ice crystals which formed during relatively slow freezing punctured the cell walls and freed the juices which caused "drip" on thawing. Research has shown that the temperature of storage is far more important than the rate of freezing.

In regard to fluctuating temperatures, there is now evidence that the quality of frozen fish is dependent on the mean storage temperature - and that the main disadvantage of a fluctuating increase in temperature is to increase the mean temperature. Of course, high storage temperatures (above 10° F.) should always be avoided because of the relatively rapid rate of deterioration.

Although it has been shown that the rate of freezing is secondary to the storage temperature, some care must be exercised during the initial freezing operation. First, if the freezing is too slow, large ice crystals may form and make the product unattractive when thawed for cooking. Even more important is the possibility that a relatively warm freezer temperature may permit spoilage of the fish before the actual freezing takes place. There have been numerous instances where spoilage of large lots of fish has occurred in the freezing rooms. In some cases this has been caused by overloading a freezer room with warm packaged fillets, the packaging material acting as effective insulation against the cold air of the freezer.

Part of the trouble experienced in the frozen fish industry of the U. S. is caused by the practices of using the freezers as a means of "saving" the "not to

fresh" fish. The fish which are landed when strictly fresh are the ones which are sold in the fresh market; while fish of lesser quality often go to the freezer. This seems to be a logical step, for the producer realizes that the amount of time required to get fresh fish to market and to the consumer is much greater than the time required for the same fish to reach a safe preservation temperature in the freezer. What he may not realize is that the quality of frozen fish is directly dependent on the condition of the fish when frozen. If the fish are of questionable quality when they go in the freezer, they will be even worse when they are removed and thawed. If a fish producer intends to build or maintain his frozen fish business on quality he will freeze only strictly fresh fish.

Very few realize that one of the regular phases of deterioration of quality in fish is loss of flavor. During this phase the fish appears fresh for the flesh has no off-flavor or odor. In fact, there is practically no odor at all. But the sea-fresh flavor and odor are gone. In this stage many people condemn the species as being tasteless - not realizing that they are not eating top quality fish.

NEW PROJECT TO DEVELOP METHODS OF MARKETING "SEA-FRESH" FISH

The Fish and Wildlife Service now has underway a project by which it hopes to devise a means of enabling the fishing industry to market "sea fresh" fish and fish fillets. It is referred to as the "Freezing-fish-at-sea" project. Laboratory and pilot plant tests have indicated that it is possible to freeze at sea strictly fresh fish in the round, bring them to port, hold them in frozen storage for a period; and then remove the fish from storage, thaw and fillet them, package the fillets in the usual manner, and refreeze them.

To test the method under commercial conditions, the Service has obtained a New England trawler. One-half of the hold of the vessel will be heavily insulated and equipped with freezing equipment. The other half of the hold will be used for icing down the fish, as is now the general practice, in order to compare the quality of the frozen and iced fish and to get information on the cost of the two methods. If the freezing-at-sea process can be successfully worked out, it will have these advantages over the present methods:

- (1) There will be no question of freshness, for the fish will be frozen almost as soon as they come from the water. (At present there is some question about freshness because fish caught by New England trawlers must be held in ice as long as 8 to 10 days before being filleted. The distance of the fishing grounds from the filleting plants makes it impossible to land all fish in less than this time.)
- (2) The vessel can remain on the fishing grounds until it has a full load of fish.
- (3) The liver and all other material now discarded at sea will be brought ashore in perfect condition for conversion into byproducts and pharmaceuticals.
- (4) The shore plants and labor will be able to operate on a fixed work schedule since the round fish will be drawn from the freezer as needed. This will eliminate the troubles caused by the glut and slack seasons which now occur each year.

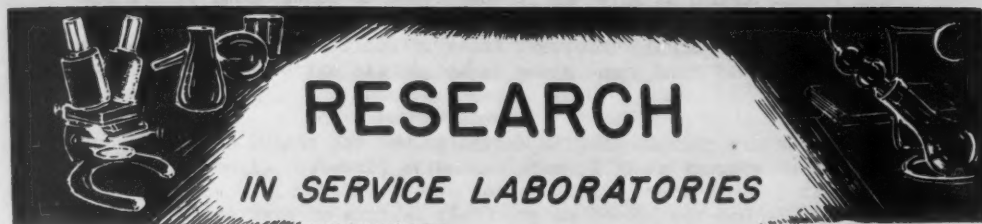


HAULING OUT FROZEN HALIBUT FROM AN ALASKAN COLD STORAGE PLANT FOR SHIPMENT TO SEATTLE.

Above all, however, is the advantage that all the fish and fish fillets produced by this method will be of uniform high quality.

It is realized that in this article many important phases of freezing of fish have not been mentioned, such as glazing, dehydration, and oxidation problems with oily fish. Time does not permit a complete discussion of all methods but it is hoped that the few points on the icing and freezing of fish which have been discussed will aid in producing quality fish and thus help both individual businesses and the fishing industry as a whole. What benefits the individual fish producer or dealer will benefit the industry, and what benefits the industry as a whole, benefits the individual business firm in the industry.





February 1951

CANNING: Handling Frozen Salmon for Canning: Canned packs from frozen whole sockeye salmon stored at 0° and -20° F., respectively, were prepared for comparative tests to determine whether storage of the frozen fish at low temperatures would minimize adverse changes in the frozen salmon used for canning. The frozen fish, stored at these temperatures for 22 weeks, were thawed and canned in $\frac{1}{2}$ -pound flat cans using the regular process. Both lots of frozen salmon had been wrapped before storage to prevent evaporation of the ice glaze. Both lots were in excellent condition; however, it was apparent, after the fish were thawed and dressed, that those stored at -20° F. were superior in quality to those stored at 0° F. The thawed salmon which were stored frozen at 0° F. had a definite "fishy" off-odor in comparison to the fresh-fish odor of those stored at -20° F. Examinations of the canned packs will be made after they have been stored for 60 days to allow proper "curing."

* * *

Organoleptic examinations have been almost completed on the series of canned pink salmon processed after the fish had been frozen and stored under various conditions. The following tentative conclusions have been made. Additional samples are being tested currently in order to confirm the indicated trends with respect to the adverse changes in texture. All comparisons were based on control samples processed from the same lot of fresh fish used for the storage tests.

1. Pink salmon thawed and canned after one week of storage at 0° F. were rated slightly lower in quality than the control pack prepared from fresh fish.
2. Pink salmon thawed and canned after 6 weeks of storage at 0° F. were rated definitely lower in quality than the control pack but were considered of marketable quality.
3. Pink salmon thawed and canned after either 16 or 24 weeks of storage at 0° F. were rated unmarketable or on the borderline in comparison with control samples.
4. Pink salmon thawed and canned after increasing periods of storage at 0° F. showed the development of adverse changes in texture, excessive curd formation on the surface, and off-flavors in the flesh close to the skin. These changes occurred in greater intensity in fish frozen and stored for the longer periods.
5. The examination of pink salmon thawed and canned after various periods of storage at 0° F. indicated that slightly lower yields of free oil

and liquid should be expected in comparison to canned pink salmon prepared from fresh fish. Inasmuch as the quantity of free oil in pink salmon is not a highly important index of quality for marketing purposes, it is felt that this trend alone is not sufficient to limit its marketability.

6. Adverse texture changes in pink salmon thawed and canned after various periods of storage at 0° F. were excessive firmness, dryness, and a "sawdust-like" texture. Pink salmon canned after only 1 week of storage at 0° F. lacked the normal moist, flaky texture of pink salmon canned from fresh fish.
7. There was little difference in the average quality between salmon stored for 6 weeks at 0° F. glazed and those stored unglazed; however, wide variations in the flavor scores were found in samples prepared from the unglazed fish. The occurrence of occasional cans with a strong rancid or off-flavor in the pack prepared from unglazed salmon suggests that glazing is of considerable importance if a pack of uniform quality is to be obtained. (Ketchikan)

* * *

REFRIGERATION: Freezing and Storing Alaska Shrimp and Dungeness Crab: Frozen coon-stripe (*Pandalus hysinotus*) and side-stripe (*Pandalopsis dispar*) shrimp were examined organoleptically after 3 months of storage at 0° F. These experimental samples were fresh-frozen aboard the Service's exploratory vessel John N. Cobb. Coon-stripe shrimp frozen raw in the shell had a satisfactory flavor but were slightly soft in texture. This was especially true of the shrimp frozen whole as compared to frozen tails. Side-stripe shrimp meats cooked 4 minutes in a 10-percent sodium chloride (salt) solution and frozen in $\frac{1}{2}$ -pound flat cans were completely unmarketable because of toughening and the development of off-flavors. Side-stripe shrimp which were cooked in water and peeled had satisfactory texture and flavor and were of marketable quality. The addition of ascorbic acid to side-stripe shrimp cooked in brine minimized the development of rancidity; however, a definite "hay-like" off-flavor was present.

* * *

Frozen side-stripe shrimp were examined after a secondary storage at 0° F. for 2 months. These packs were prepared from shrimp frozen whole at sea on the vessel John N. Cobb and thawed, processed, and refrozen after one month of initial storage at 0° F. Shrimp vacuum packed in $\frac{1}{2}$ -pound flat cans were slightly superior in color and flavor to those hermetically sealed in the same type can with plastic top. There was little difference in the color, flavor, and texture of the brine-cooked shrimp before freezing, although shrimp which had been cooked four minutes in 10-percent brine were considered slightly salty. Shrimp cooked 20 minutes at 5-pounds-steam pressure in a retort before freezing had a slightly mealy texture and a definite off-flavor. Judging from these samples it would appear practical to freeze the raw shrimp at sea for later thawing, packaging, and refreezing ashore. The soft texture of the frozen whole shrimp is counteracted, apparently, by brine-cooking before refreezing. All packs were considered of marketable quality with the exception of shrimp steam cooked in the retort before refreezing.

* * *

Frozen whole Dungeness crab were examined after 4 months of storage at 0° and -20° F. in connection with the study of the effect of freezing the whole crabs both cooked and raw. Because of the limited number of samples examined these results are considered tentative; however, there is a definite indication that storage at -20° F. minimized the toughening of crab meat from frozen cooked whole crab. Loss of normal color and flavor developed in lots stored at -20° F. for the 4-month period. Evidently low temperature storage does not solve the problem of flavor change in cooked Dungeness crab frozen in the shell. Meat from raw-frozen whole Dungeness crab was unsatisfactory with regard to both texture and flavor. (Ketchikan)

* * *

Palatability and Cold-Storage Life of Various Species of Rockfish: A study is being made of the cold-storage life of various species of rockfish in an effort to determine whether some species have a greater cold-storage life than certain others. Results obtained during the month indicated that after six months in cold storage at 0° F. only the samples of Sebastes marinus (Atlantic rosefish or ocean perch), Sebastes alutus (long-jawed rockfish), S. paucispinis (bocaccio), "idiot" (scientific name unknown), and S. goodei (?) ("chili pepper") were still of edible quality but showed signs of incipient rancidity. The samples of S. minatus (vermillion rockfish), S. ruberrimus (red rockfish), S. pinniger (orange rockfish), and S. diploproa (lobe-jawed rockfish) were inedible. (Seattle)

* * *

NUTRITION: Utilization of Salmon Cannery Waste for Hatchery Food: Arrangements were made by the Seattle laboratory with a local fish company for the collection of 100,000 pounds of salmon waste at Petersburg, Alaska, next summer for use by Federal fish hatcheries for production of hatchery fish. Frozen viscera and preserved and frozen eggs will be collected at Petersburg and shipped to hatcheries in Washington for large-scale feeding tests. Results of experimental fish feeding tests with salmon waste indicated the feasibility of using selected portions of the waste.

This large scale test should demonstrate whether or not it is practical to obtain such material for hatchery feed from Alaska if it is not available in quantity in the Puget Sound and Columbia River areas.

A portion of the salmon eggs will be preserved in accordance with methods developed and tested in the laboratory. Best results so far were obtained on eggs preserved with bisulfite.

This large-scale feeding study is part of an over-all hatchery-food project being carried out by the Seattle laboratory in cooperation with Federal fish hatcheries and various State organizations. The objective of the investigation is to develop optimum nutritional diets of lowest cost for use in artificial propagation of salmon in fish hatcheries. (Seattle)

* * *

TECHNICAL NOTE NO. 10 - PAPER BAGS FOR FISH MEAL

Paper bags have become a permanent fixture in the West Coast fish meal industry. Complaints voiced in the early days of their use, such as "easy to break," "hard to handle," and "oily stains on bags" are seldom heard due to improvement in bags and

handling techniques. Shortage of burlap has had a great deal to do with the general shift to multi-wall paper bags. Now that burlap is easier to obtain, the pendulum is still toward paper. As long as paper competes economically, this situation will continue.

As with any other container, every producer has his own preferences as to size of bag, strength of paper, filling and closing techniques, and storage methods.

Bags now being used for packing 100 pounds of meal are about 23 inches wide and from 35 to 41 inches long. The length depends on the size of the gussets along the edges. A good average bag would be $19 \times 4\frac{1}{2} \times 40$ inches; that is, a width of 19 inches, a gusset of $4\frac{1}{2}$ inches, and a length of 40 inches. When the bag is spread flat, the gusset would make the total width $23\frac{1}{2}$ inches.

Most bags used are made of heavy 50-pound (per ream) kraft paper. Plys vary from 3 to 5 with 4 being the minimum recommended by bag manufacturers. If meal is to be shipped over long distances or by boat, it is a good idea to add one ply of asphalt paper for protection. Starting from the inside, the first ply would be 50-pound kraft; the second ply, 75-pound asphalt tar sheet; and the next three plys, 50-pound kraft. Many manufacturers use this asphalt paper for all shipments including local orders, and others declare this an unnecessary expense. It must be stressed, however, that the asphalt ply is necessary in long-distance shipping to reduce fire hazards caused by heating meal. A great deal of this heating is stopped in asphalt bags due to the stoppage of air (oxygen) from permeating the paper.

Meal bags are filled by placing or hanging them under hopper spouts. The amount of meal in the filled bag is controlled by several different methods. Most simple among these procedures is to manually release the hopper door until sufficient meal has fallen into the sack which is sitting on a tared scale. Newer methods consist of automatic scales sometimes integrated with constantly revolving turrets.

After it is filled, the meal sack is placed on a conveyor belt which passes under the closing or stitching machine. Most meal producers use a double-locked stitch with five- or six-ply twine. A filler thread is sometimes used, but has been found unnecessary. Tape along the top seam is also not required but does make a neater looking package that will eliminate any possible sifting. The few plants that tape the top seam use 90-pound (per ream) natural kraft tape.

There is much disagreement among producers as to whether meal should be cooled before sacking in paper bags. Some let the meal cool on the floor or in bins for a day or so before sacking; others sack the meal as it comes directly from the dryer at 110° F. to 130° F. In no instance are the filled paper bags allowed to cool before stacking. Practically no fires caused by heating meal are being reported so these cooling methods must be fairly adequate.

The kraft multi-wall bags now in industrial use are so popular that only a shortage of paper will prevent their continued use.

—George M. Pigott, Chemical Engineer
Fishery Technological Laboratory,
Seattle, Washington





TRENDS AND DEVELOPMENTS

Additions to the Fleet of U. S. Fishing Vessels

A total of 44 vessels (5 net tons and over) received first documents as fishing craft during December 1950—19 less than in December 1949. Florida led with 12 vessels, followed by California with 10, the Treasury Department's Bureau of Customs reported.

During 1950, a total of 812 vessels were documented as compared with 1,002 during 1949.

Of the vessels receiving their first documents as fishing craft during December, 31 were built during 1949 and 1950 and the remainder were built prior to 1949.

Of the total vessels documented in 1950, 441 were built in 1950, 84 in 1949, and the balance (287) in years prior to 1949.

Vessels Obtaining Their First Documents as Fishing Craft, December 1950				
Section	December		Annual Total	
	1950	1949	1950	1949
	Number	Number	Number	Number
New England	-	3	36	35
Middle Atlantic	-	2	45	44
Chesapeake Bay	4	12	81	87
South Atlantic and Gulf	21	33	320	369
Pacific Coast	14	9	231	327
Great Lakes	1	-	12	38
Alaska	3	4	83	96
Hawaii	1	-	4	5
Unknown	-	-	-	1
Total	44	63	812	1,002

Note: Vessels have been assigned to the various sections on the basis of their home port.



Fishery Biology Notes

TECHNIQUE FOR REVEALING GROWTH RINGS IN TUNA VERTEBRAE: A successful technique for revealing growth rings in tuna vertebrae has been developed by the Laboratory Director of the Service's Shellfish Laboratory at Woods Hole, Mass. This technique has been developed at the request of the Service's North Atlantic Fishery Investigations. The procedure consists of treating the bones with potassium hydroxide solution, staining with alizarin Red S, and clarifying in glycerine.

Federal Purchases of Fishery Products

FRESH AND FROZEN FISH PURCHASES BY DEPARTMENT OF THE ARMY, JANUARY 1951: Purchases of fresh and frozen fishery products during January this year by the U. S. Army Quartermaster Corps for military feeding amounted to 1,705,128 pounds (valued at \$732,373). This was an increase of 24.7 percent in quantity and 26.6 percent in value as compared with December 1949, and 45.8 percent in quantity and 46.5 percent in value over January 1950 (see table).

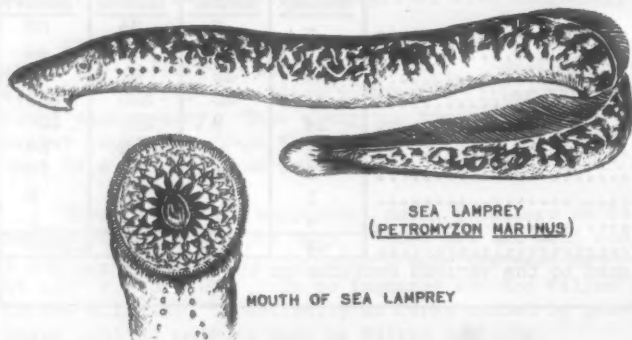
Purchases of Fresh and Frozen Fishery Products by Department of the Army (January 1951 and 1950)			
QUANTITY		VALUE	
January		January	
1951	1950	1951	1950
lbs.	lbs.	\$	\$
1,705,128	1,169,773	732,373	499,972



Great Lakes Fishery Investigations

DISAPPEARANCE OF LAKE TROUT IN LAKES HURON AND MICHIGAN ATTRIBUTED TO SEA LAMPREY: A few people unacquainted with lake trout fishery trends have suggested that the decline of this fishery in Lake Huron and Lake Michigan was the result of overfishing; hence, the present industry distress is but just retribution for a wanton and destructive exploitation of the stocks. Complete and detailed statistics, beginning with 1929, on actual quantities of gear lifted that produced lake trout demonstrate conclusively that overfishing could not have brought about the collapse in the lake trout fishery in the United States waters of Lake Huron or in the State of Michigan waters of Lake Michigan, according to a January report from the Service's Great Lakes Fishery Investigations. Fishing pressure in both areas tended to be

below the modern average in the years immediately preceding and during the recent decline. The outside possibility that some obscure and altogether unsuspected factor may have destroyed the lake trout populations of Lakes Huron and Michigan cannot be ignored. However, the most careful consideration of presently available evidence nevertheless permits only the conclusion that the sea lamprey was the major, perhaps the only significant, cause of the lake trout decrease in both lakes.



SEA LAMPREY
(PETROMYZON MARINUS)

MOUTH OF SEA LAMPREY

THE SEA LAMPREY, WHICH FEEDS ON THE BLOOD AND FLESH OF FISH, IS PREYING ON THE LAKE TROUT OF THE GREAT LAKES AND IS THREATENING THAT FISHERY.

At prevailing market prices the actual cash-income loss to the commercial fishermen of Lakes Huron and Michigan resulting from decreases in the lake trout catch amounts to approximately \$3.5 million. At an interest rate of 4 percent, this amount represents an annual return from a capital investment of \$87.5. When one also applies the income decrease to fish wholesalers and retailers, transportation companies, and manufacturers of fishing equipment and supplies, and then adds to the above the value of other species of fish that have been harmed by the sea lamprey, the real gravity

of the economic losses suffered and the urgent need of sparing no effort to bring the parasite under control become even more obvious.

Although the sea lamprey was first reported in Lake Superior in 1945, its effects on lake trout have been only local in that Lake. Production of lake trout has held up, but no comfort should be taken from Lake Superior production data because records prove that (1) the catch per net is declining and the yield has been maintained in recent years only by increased fishing pressure; and (2) experiences in Lake Huron and especially in Lake Michigan, prove complete collapse of the fishery can take place in only a few years.



Gulf Exploratory Fishery Program

GROOVED SHRIMP LOCATED BY "OREGON" OFF FLORIDA WEST COAST ONLY IN KNOWN AREAS:

Locating pink grooved shrimp grounds in the southeast Gulf of Mexico was the main purpose of Cruise No. 6 of the Service's exploratory fishery vessel Oregon. The vessel left Pascagoula on January 8, 1951, and returned on January 28, 1951.

A series of shrimp trawls were made on Campeche Bank in depths between 14 and 120 fathoms. The area covered was found unsuitable for trawling and only one specimen of the pink grooved shrimp was taken.

The area between Tampa Bay and Dry Tortugas was worked in depths from 2 to 80 fathoms. Commercial concentrations of the pink grooved shrimp were found only in the area of the present fishery grounds. Trawling in the areas north to Tampa Bay produced very small catches of shrimp.

Trawling stations were made comparing the effectiveness of a "bottomless" trawl to that of the flat and "balloon" trawls in areas where dense sponge beds made conventional trawling prohibitive. In this series, the "bottomless" trawl picked up approximately 1/5 of the sponge taken in the other trawls. As yet, the "bottomless" trawl has not been tested and compared to other trawls in the catching of shrimp. However, in the stations already made it caught as many shrimp as did the other nets.

Two widely scattered schools of little tuna were observed about 90 miles north northeast of Alacran reef on January 10. Trolling lines failed to produce any catch although the Oregon was able to pass through the middle of the school of fish.

A series of 150-fathom bathythermograph recordings were made at 30-mile intervals from the Mississippi Coast to Campeche Bank. Plankton tows were made in the north and central Gulf.



North Pacific Exploratory Fishery Program

"JOHN N. COBB" EXPLORES EXTENT OF SHRIMP POPULATIONS OFF SOUTHEASTERN ALASKA:

The purpose of Cruise No. 7 of the John N. Cobb is to ascertain the extent and size of the shrimp and other shellfish populations in the waters of Icy Strait, Lynn

Canal, and adjacent areas; and to determine if concentrations of shrimp or other shellfish are found in these waters in quantities sufficient to support a commercial fishery. The John N. Cobb, one of the Service's exploratory fishing vessels, left Seattle about March 1 and was scheduled to return to Seattle between April 20 and May 1.

Several types of gear will be fished, including beam trawls, and shrimp and crab pots. Otter trawls will also be employed as a means of sampling the bottom life. Trawlability of the bottom will be ascertained by use of recording "Fathometer" traces, and oceanographic and other scientific observations will be made at each fishing station.

Experiments will be continued on freezing and canning shrimp at sea. These will be carried out by members of the staff of the Fishery Products Laboratory at Ketchikan, Alaska.



Pacific Marine Fisheries Commission Meets

A meeting of the Pacific Marine Fisheries Commission was held at San Francisco, California, on December 4-5, 1950. Included in the business of the meeting was a discussion of the City of Tacoma's application to the Federal Power Commission for a permit to construct two dams on the Cowlitz River in Washington. Resolutions pointing out the effects of dams on salmon runs and requesting that the Federal Power Commission deny such permit were adopted by both the Pacific Marine Fisheries Commission and its Advisory Committee.

Research on the following fisheries was presented and discussed by representatives of the three Pacific Coast States, Canada, and Alaska:

Albacore: The size composition of the 1950 albacore catches as indicated by market samples taken at the various ports along the coast was reviewed. The group of small albacore (about 54 centimeters in length) which appeared in the 1949 catches was not present to any extent in the 1950 landings. Progress on racial studies on local and Japanese albacore was discussed as were methods of age determinations.

Otter Trawl: Research reported on the otter trawl fishery included tagging, age determinations, and sampling of the catches. Recoveries of tagged flatfish indicated, in general, but little migration of English, Dover, and petrale soles. The sampling program was directed primarily toward determining the composition of the catches as they are brought aboard the trawlers and prior to being culled for market. In this manner the changes occurring in the stocks both of commercial and non-commercial species is being measured.

Sablefish: About 4,000 sablefish (blackcod) were reported tagged along the Pacific Coast in 1950 in order to study the migrations of this species. The progress of racial analyses of these fish from various areas along the coast was discussed as were studies on age determinations, market sampling, and early life history.

Troll Salmon: Further findings concerning the ocean migrations of chinook and silver salmon as revealed by offshore tagging operations were conducted by

the various fisheries organizations along the Pacific Coast and extended from California to Alaska. Chinooks tagged off Alaska were recovered as far south as the Columbia River. Those tagged off California were recovered chiefly in the Sacramento-San Joaquin River system although a few were recaptured to the northward. Tagged silver salmon, in general, migrated shorter distances than the chinooks. Silvers tagged off California and Oregon moved northward while those tagged off Alaska tended to move southward in somewhat less directional migrations.

To supplement the tagging experiments, large numbers of fingerling chinook and silver salmon are being fin-marked and released in various rivers along the coast to migrate to the ocean. The subsequent recapture of these marked fish by the troll fishery will indicate the contribution of the several rivers to the troll fisheries of the different offshore areas.



Pacific Oceanic Fishery Investigations

"HENRY O'MALLEY" DECOMMISSIONED AND OFFERED FOR SALE: After extensive repairs, sea trials proved that the Henry O'Malley was unseaworthy and it was not economically feasible to repair the vessel for research purposes. This vessel is one of the three research vessels used by the Service's Pacific Oceanic Fishery Investigations.

Early in February the Henry O'Malley, a 128-foot tuna bait boat, was offered for sale by the U. S. Fish and Wildlife Service. The vessel was sold for \$127,501 on February 16 in San Pedro, California.

Packaging Materials Shortage Foreseen

A discussion of the outlook for packaging materials was the main item of business at the February monthly meeting of the Federal Specifications Committee on Packaging, according to a staff member of the Service's College Park Fishery Technological Laboratory, who attended the meeting. The general opinion expressed was that all types of packaging materials, lumber, paper products, moisture-vapor proof films, and metal foils are already in short supply and the outlook is bearish.

The need for a continuous and active campaign of conservation of all packaging materials was stressed repeatedly by the Chairman of the meeting. This should consist of "doing without," reducing quality or grade when possible, and the salvaging and reuse of every possible material.

Wholesale and Retail Prices

WHOLESALE PRICES, JANUARY 1951: Because of an improvement in the production of and a slight decline in the demand for fresh and frozen processed fishery products, there was a small over-all drop in the January prices for these products. On the other hand, increased demand for canned fishery products and the short salmon pack this past season pushed prices for canned fish still higher.

The edible fish and shellfish (fresh, frozen, and canned) wholesale index for January was 113.7 percent of the 1947 average (see table 1)--0.7 percent higher than the previous month and 10.0 percent above January 1950, the Bureau of Labor Statistics of the Department of Labor reports.

Heavier landings of haddock in New England and a better supply of fresh-water fish from the Great Lakes (mostly from Canada) resulted in a decline of 2.8 percent in the drawn, dressed, or whole fin fish subgroup from December 1950 to January 1951, but this index was still 2.2 percent higher than in January 1950. Compared with January 1950, average prices in January this year for large drawn offshore haddock were 12.3 percent lower, while for frozen dressed Western halibut they were 19.6 percent higher and for frozen large and medium king salmon, 15.1 percent higher.

Table 1 - Wholesale Average Prices and Indexes of Fish and Shellfish, January 1951, with Comparative Data									
GROUP, SUBGROUP, AND ITEM SPECIFICATION	POINT OF PRICING	UNIT	AVERAGE PRICES (\$)			INDEXES (1947 = 100)			
			Jan. 1951	Dec. 1950	Jan. 1950	Jan. 1951	Dec. 1950	Jan. 1950	
ALL FISH AND SHELLFISH (Fresh, Frozen, and Canned)									
Fresh and Frozen Fishery Products:									
Drawn, Dressed, or Whole Finfish:									
Haddock, large, offshore, drawn, fresh	Boston	lb.	.15	.14	.15	133.7	142.4	132.5	
Halibut, Western, 20/30 lbs., dressed, fresh or frozen	New York City	"	.39	.40	.33	114.1	115.3	95.4	
Salmon, king, lge. & med., dressed, fresh or frozen	" " "	"	.56	.55	.47	132.5	134.4	115.1	
Lake trout, domestic, mostly No. 1, drawn (dressed), fresh	Chicago	"	.57	.50	.56	125.2	109.8	123.2	
Whitefish, mostly Lake Superior, drawn (dressed), fresh	"	"	.48	.51	.50	139.5	146.0	142.4	
Whitefish, mostly Lake Erie pound net, round, fresh	New York City	"	.46	.61	.82	104.0	137.9	119.1	
Yellow pike, mostly Michigan (Lakes Michigan & Huron), round, fresh	" " "	"	.47	.39	.45	111.2	92.2	105.6	
Processed, Fresh (Fish and Shellfish):									
Filletts, haddock, small, skins on, 30-lb. tins	Boston	lb.	.74	.59	.59	122.3	99.9	137.6	
Shrimp, lge. (26-30 count), headless, fresh or frozen	New York City	"	.57	.55	.63	92.4	79.7	91.2	
Oysters, shucked, standards	Norfolk area	gal.	4.60	4.98	3.95	116.2	120.0	97.2	
Processed, Frozen (Fish and Shellfish):									
Filletts: Flounder (yellowtail), skinless, 10-lb. boxes	Boston	lb.	.35	.25	.30	113.0	113.0	96.0	
Haddock, small, 10-lb. cello-pack	"	"	.22	.22	.29	99.6	130.7	131.2	
Rosefish, 10-lb. cello-pack	Gloucester	"	.26	.26	.21	137.8	131.9	106.0	
Shrimp, lge. (26-30 count), 5- to 10-lb. boxes	Chicago	"	.53	.53	.63	77.0	75.9	91.1	
Canned Fishery Products:									
Salmon, pink, No. 1 tall (16 oz.), 48 cans per case	Seattle	case	24.03	25.64	15.76	156.7	154.1	102.7	
Tuna, light meat, solid pack, No. 3 tins (7 oz.), 48 cans per case	Los Angeles	"	14.90	14.75	14.25	96.9	95.0	92.7	
Sardines (pilchards), California, tomato pack, No. 1 oval (15 oz.), 48 cans per case	"	"	6.62	6.25	5.75	74.1	69.9	64.3	
Sardines, Maine, keyless oil, No. 3 drawn (3 1/2 oz.), 100 cans per case	New York City	"	6.30	5.80	7.25	60.5	55.9	71.1	

Although the fresh processed fishery products subgroup index this January rose 3.2 percent over December 1950, it was only 0.6 percent higher than in January 1950. Compared with December 1950, prices quoted during January for fresh haddock filletts and large headless shrimp were higher, but they were still considerably below the corresponding month a year earlier.

With cold storage holdings at the highest point for the year but still below a year earlier, the January index for processed frozen fish and shellfish increased 1.7 percent over December 1950, but was 2.8 percent below January 1950. During this period price increases were reported mainly for frozen rosefish filletts (holdings of which are below a year earlier) and shrimp (in spite of heavy imports from Mexico and large cold storage holdings). But larger catches of haddock at Boston increased the processing of frozen haddock filletts and consequently prices quoted for this product dropped slightly this January. On the other hand, compared with the corresponding month a year earlier, January prices for frozen haddock filletts and frozen shrimp were substantially lower, while quotations for frozen rosefish (ocean perch) filletts were substantially higher.

Prices of canned fishery products increased substantially in January. The month's index for this subgroup was 2.5 percent higher than December 1950, and 26.3 percent greater than in January 1951. Higher prices were reported during January for each canned product under this subgroup. Compared with January 1950, quotations this January were 52.6 percent higher for pink salmon, 15.2 percent higher for California sardines, 4.5 percent higher for tuna, but 14.5 percent lower for Maine sardines.

ADJUSTMENT OF CONSUMERS' PRICE INDEX: Adjustments to improve the Consumers' Price Index and to make it a more accurate measure of price changes in the mobilization period have been incorporated in this index issued by the Bureau of Labor Statistics, U. S. Department of Labor, according to a February 20 news release from that Bureau. The improved index was recalculated back to January 1950 so that it will measure price changes over the critical periods before and after the outbreak of the Korean conflict. These recalculated indexes will replace those released by the Bureau each month during the year 1950.

The adjustments introduced as of January 1950 include the revision of population weights, correction of the "new unit bias" in the rent index, the addition of new items, and the revision of commodity weights. Revised population weights for use in combining data for individual cities into a United States average were calculated, using the population figures from the 1950 Decennial Census. Among the new items added were frozen foods, but as far as fishery products are concerned the Bureau has been pricing quick-frozen fish since March 1950.

No changes have been made in the pricing procedures or specifications for fishery products. However, in revising the commodity weights, the importance of fishery products in the "all foods" category has dropped from 3.4 percent under the old index to 3.0 percent under the adjusted index. The Bureau reports that "the importance attached to the various items and groups of items in the index calculations have been adjusted to reflect present-day family spending habits. These adjustments of 'weights' are based on recent studies of what families buy and how much they spend." The Bureau has relied principally on its own studies of family expenditures in seven cities since 1947; and valuable information has been drawn also from recent food consumption surveys by the Department of Agriculture, and from trade and official sources on production, marketing, sales, and other facts pertinent to consumption and expenditures. Data from all these sources were used to estimate 1949 quantity consumption at 1950 prices, as a basis for adjusted index weights.

Indexes calculated with the adjusted weights have been linked to the "old series" at January 1950 to form a continuous series. Therefore, the original base periods have not been changed and the major characteristics of the Consumers' Price Index remain unchanged. The adjusted series is an improved measure of the movement of prices of goods and services purchased by moderate-income families in large cities. No change has been made in the basic index formula, the calculation procedures, or the price collection method. In the case of fishery products, the only change is the drop in commodity-weight value within the "all foods" category and the indirect effect that the use of 1950 Decennial Census populations figures will have on the index as a whole and its components, including the fishery products component.

RETAIL PRICES, JANUARY 1951: Retail prices of fishery products bought by moderate-income urban families continued their rise between December 1950 and January this year (table 2), according to the Bureau of Labor Statistics, U. S. Department of Labor. However, the increase in fishery products was not as great as that for all foods as a group.

Retail prices of fish and shellfish (fresh, frozen, and canned) increased 1.5 percent, on the average, between mid-December and mid-January. On January 15, the

Table 2 - Adjusted Retail Price Indexes for Foods and Fishery Products, January 15, 1951, with Comparative Data				
Item	Base	I N D E X E S		
		Jan. 15, 1951	Dec. 15, 1950	Jan. 15, 1950
All foods	1935-39 = 100	221.9	216.3	196.0
All fish and shellfish (fresh, frozen, & canned) ...	do	345.3	340.3	301.9
Fresh and frozen fish	1938-39 = 100	283.0	279.5	272.2
Canned salmon: pink	do	493.7	484.5	355.9

adjusted all fish and shellfish index was 345.3 percent of the 1935-39 average--1.3 percent higher than the previous month and 14.4 percent above mid-January 1950. Again the major portion of the increase in the fishery products index was due to higher prices quoted for canned fish, especially canned salmon.

In mid-January prices of fresh and frozen fishery products rose 1.3 percent above those which were quoted in mid-December, and they were 4.0 percent higher than in mid-January a year earlier.

Prices for canned pink salmon continued to climb and the index on January 15 this year was 493.7 percent of the 1938-39 average--1.9 percent above the previous month and 38.7 percent above mid-January 1950.

Table 3 - "Old Series" Retail Price Indexes for Foods and Fishery Products, January 15, 1951, with Comparative Data			
Item	Base	INDEXES	
		Jan. 15, 1951	Dec. 15, 1950
All foods	1935-39 = 100	221.6	215.4
All fish and shellfish (fresh, frozen, and canned)	do	344.0	339.8
Fresh and frozen fish	1938-39 = 100	289.6	287.1
Canned salmon: pink	do	465.1	456.4

In the future, the retail index data published under this section will refer to the improved, adjusted series. However, for this month the January 15, 1951, and the December 15, 1950, index data from the "old series" is shown in table 3 for purposes of comparison to show how the improved, adjusted index series has affected the fishery products components of the index series.



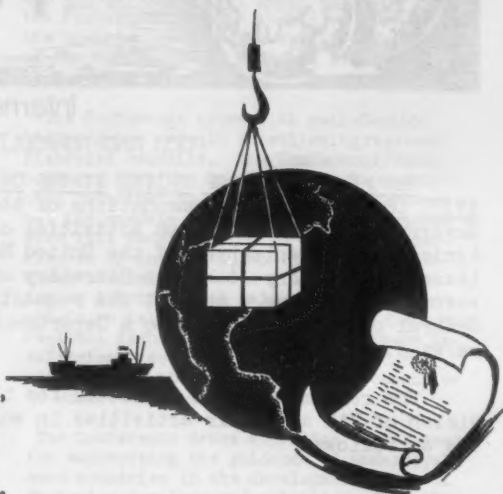
ECA Procurement Authorizations for Fishery Products

Among the procurement and reimbursement authorizations announced by the Economic Cooperation Administration during February this year was \$350,000 to be used for the purchase of canned fish from the United States and Possessions. Of this amount, \$150,000 was to be used by Greece for the purchase of canned fish (except shrimp, crab meat, lobster, salmon, or tuna) and the remaining \$200,000 was to be used by Belgium-Luxembourg also for canned fish (except shrimp, crab meat, or lobster).

There were no cancellations or decreases during February affecting previous authorizations for fishery products.

ECA procurement authorizations for fishery products for the period April 1, 1948, through February 28, 1951, totaled \$29,783,000 (\$17,094,000 for edible fishery products; \$11,149,000 for fish and whale oils; and \$1,540,000 for fish meal). Of this total \$10,694,000 was used for purchases in the United States and Possessions (canned fish \$7,606,000; salted fish, \$9,000; fish and whale oils, \$3,079,000). Also, during the entire period \$220,000 was authorized under the Far Eastern Aid Programs for use by Korea for the purchase of fish and whale oils from the United States and Possessions.

In addition to fishery products, there were authorizations for the purchase of various types of equipment used in the fisheries, such as vessels, materials for construction of fishing vessels and plants, etc., but exact amounts for these authorizations cannot be determined since in most cases they are in broad categories which include other industries besides fisheries.



PACKAGED FISH--1949

DO YOU KNOW.....

That the total production of groundfish (cod, cusk, haddock, hake, pollock) and rosefish fillets during 1949 in continental United States amounted to 140,078,191 pounds, valued at \$32,055,849 to the processors.



Imports of these fillets during the year amounted to 47,322,265 pounds, valued at \$8,728,272.

* * *

That about 590,000,000 pounds of round fish were required to produce the 194,011,159 pounds of packaged fish produced in 1949 in the United States.

--Current Fishery Statistics 579



International

FOOD AND AGRICULTURE ORGANIZATION

RECOMMENDATIONS OF UNITED STATES ON LONG-TERM ACTIVITIES OF FAO: The recommendations of the United States Government on the long-term activities of the Food and Agriculture Organization of the United Nations were released on February 16 by the Secretary of State. These recommendations were made at the request of the Director General of FAO, according to a Department of State news release.

The recommendations submitted for the Fisheries Division of FAO and their activities in world fisheries are as follows:



The United States has consistently recommended that the program of the Fisheries Division be carefully examined to determine whether its scope and the number of projects were not beyond the limitations imposed by the funds and personnel available. For example, the United States position on the Program of Work and Budget for 1951 was that, "in the absence of additional funds the Fisheries Division should bear in mind the need for consolidating, curtailing or eliminating some projects in order not to endanger others of greater importance." The United States also suggested that, "the initiation of a Latin American Fisheries Council (FI. 5.3.1) be held in abeyance and that the Fisheries Division's efforts in this field be devoted to establishing firmly the two Councils already in existence." The Report of the Committee on Financial Control, C50/5, August 14, 1950, for the recent Special Session of the Conference incorporated a United States suggestion that, "if additional funds cannot be made available, a more efficient utilization of funds might result from a designation of priorities, and the elimination of some of the projects of lower priority."

It is recommended that the Fisheries Division concentrate its efforts on fewer projects, choosing those of demonstrated value, international significance, and of the greatest possible importance.

In adapting its program to meet these criteria the following specific recommendations are made:

1. The Yearbook of Fishery Statistics should be continued. Improvement in its coverage should be sought as well as eventual issuance annually rather than biennially.
2. World Fisheries Abstracts should be continued with particular stress laid on

improving its distribution in those countries which are so much in need of the technical information it contains.

3. The Fisheries Bulletin should be continued. The inclusion of important current statistical data of international significance should be stressed as long as the Yearbook of Fishery Statistics remains a biennial publication. The additional material in the Bulletin should include items which meet specific needs and are at least regionally significant and useful to large groups. As in the case of World Fisheries Abstracts every consideration should be given to correcting any deficiencies in distribution.
4. Improved pondfish culture practices should be introduced in those countries, especially in the Near East and Far East, where such procedures are adaptable to the environment. In these countries the production of pondfish probably offers one of the greatest potential contributions to the supply of local fishery foods.
5. Improved methods of producing, processing and distributing fish and fishery products should be taught in those countries where increased local supplies can be achieved by greater exploitation of available fishery resources, by introducing processing methods that preserve the raw material for longer periods, and by remedying distribution practices that limit the markets to the seacoasts.
6. Service to countries requesting assistance should be predicated on securing the utmost possible aid from the countries involved in order to (1) insure a mutual interest that

will guarantee successful completion of the project, and (2) the most effective use of available FAO funds and personnel.

7. The limited staff of the Fisheries Division should make itself most effective in introducing improved techniques by utilizing methods which will multiply its efforts. The staff should teach groups of teachers rather than groups of individuals. Technical handbooks should be developed. Demonstration manuals should be prepared. The establishment of fishery centers should be stimulated and those in existence aided. Where possible extension service practices should be adapted to local needs. Improving local methods should not be stressed unless the introduction of totally new techniques is well within the immediate abilities of the underdeveloped countries.
8. Despite the need for demonstrating results annually to the Conference, the Fisheries Division should balance its program between long-term and short-term projects. To meet the demand for assistance in carrying out the numerous minor, short-term projects of a localized nature, the Fisheries Division should develop a list of fishery consultants in the industrial, governmental, and educational fields to which the interested countries could be referred. The contribution of the Fish-

eries Division in these projects should vary with their regional significance from a review of the contemplated procedures and reference to qualified consultants to large-scale participation.

9. With regard to regional fisheries councils and the development of local fisheries, the Fisheries Division should be guided by the position endorsed by the Fifth Session of the Conference in November 1949 which is as follows:

"The Conference notes with satisfaction the progress made in establishing regional fisheries councils. The Conference feels, however, that the Organization, in continuing consultation with governments to carry out the mandate of former sessions, should give full consideration to work being carried on by international fisheries commissions or similar bodies already functioning in international waters. Finally, care should be taken in the formation of further regional fisheries councils, that there is sufficient technical fisheries personnel available in the potential member countries to ensure the council's success....."

The Conference draws attention to the need for emphasizing the guidance of underdeveloped countries in the development of local fisheries for improved nutrition of local populations rather than for export."

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FOOD AND AGRICULTURE ORGANIZATION MOVES TO ROME: Removal of the Food and Agriculture Organization of the United Nations from temporary headquarters in Washington, D. C., to its permanent seat in Rome, Italy, got underway on February 17, when the first FAO contingent sailed from New York. Others were scheduled to go on three subsequent sailings on March 1, 22, and April 4, according to a February 16 news release from FAO.

This agency has made its temporary home in Washington since its founding in October 1945, when 44 nations agreed to work together to help solve world food and agriculture problems. FAO now has a membership of 65 nations. Following the vote of the 1949 Conference to establish permanent headquarters in Rome, FAO has been working on the complex task of transferring and housing the staff and their families, and of moving organization archives with a minimum of interruption in its world-wide activities. Of a staff of 600, about 200 are moving. Clerical and maintenance staffs will be replaced largely by local employees in Rome.

FAO moves from its temporary headquarters building in Washington, D. C., into a building provided by the Italian government in the ancient part of Rome, alongside the Circus Maximus, not far from the Coliseum. A second building, adjoining the first, will be completed later this year, and will include additional FAO offices, a conference room with modern equipment and facilities, and an expanded FAO library. The library will include thousands of volumes from the former International Institute of Agriculture at Rome, making the combined library one of the largest in the world on agricultural subjects.

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INDO-PACIFIC FISHERIES COUNCIL ACCEPTED BY CAMBODIA: The Government of Cambodia has accepted the Agreement reached at Baguio, Republic of the Philippines, February 28, 1948, for the formation of the Indo-Pacific Fisheries Council. Notification was received by the Food and Agriculture Organization on January 20, 1951.

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INDO-PACIFIC FISHERIES COUNCIL^{1/} ACCEPTED BY VIET-NAM: The Government of the State of Viet-Nam has accepted the Agreement reached at Baguio, Republic of the Philippines, February 28, 1948, for the formation of the Indo-Pacific Fisheries Council. Notification was received by the Food and Agriculture Organization on January 3, 1951.

^{1/} SEE COMMERCIAL FISHERIES REVIEW, JULY 1950, P. 23.

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HUNGARY WITHDRAWS FROM FAO: The People's Republic of Hungary has given notice of withdrawal from FAO, the Director-General of the Food and Agriculture Organization of the United Nations advised member governments of FAO on January 7. This will take effect one year after the date of its communication to the Director-General, subject to provisions of the FAO Constitution.



Bermuda

HINTS OF NEW FISHING GROUNDS OFF BERMUDA: There is a possibility that new fishery resources may be opened up within the next few months a few miles off the shores of Bermuda, according to Dr. Louis W. Hutchins, Director of the Biological Station of Bermuda. Sonic depth findings (500 fathoms) in a recent research survey have shown that there is a constant echo from something at that depth, reports a January 22 American consular dispatch from Hamilton.

It is hoped by local promoters that the reason for this constant echo may be shrimp or other valuable food, and that experiments may open up commercial fishing. There is some secrecy surrounding this research effort of the Bermuda Biological Station, which is operating on Government orders. Private interests are working simultaneously and are ready to exploit the new resources if they materialize.

Every effort is being made to make the first attempt of trawling these grounds with nets now on order from England and other countries before the Oceanic Fisheries Conference meets here on May 28, 1951.

There has been a lot of international interest shown in the matter already. Invitations to view the tests have been sent to fishing experts in many countries and several replies have been received. Representatives from the Bahamas will attend, together with groups from the United States.



Costa Rica

CONTRACT RENEWAL WITH U. S. SUBSIDIARY FISHERY FIRM PROVIDES FOR FISHING INDUSTRY DEVELOPMENT: The Government of Costa Rica has renewed the contract under which a United States subsidiary refrigeration company at Puntarenas operates, according to a January 25 American Embassy dispatch from San Jose. This refrigeration company is a subsidiary of a large United States west coast fishery firm. Conditions now imposed on the contractor provide for normal development of the Costa Rican fishing industry. In effect, an export tax has been imposed on tuna caught outside Costa Rican waters and landed in Costa Rica for refrigeration and transshipment to the United States.

The contract under which the refrigeration company at Puntarenas operates in Costa Rica has been extended for a period of 15 years, renewable for an additional period of 15 years.

For several years Costa Rica has been giving serious consideration to development of a policy for expansion of the country's fishing industry. Among the factors which have been discussed have been (1) the possibility of maintaining a fishing fleet, (2) the possibility of fertilizer for national needs from the catch of a national fishing fleet, (3) the development of the local market for fresh fish, and (4) the development of Puntarenas as an operating base for tuna fishing boats supplying the American market. The provisions of the contract extension would indicate that the present policy envisages development of the local industry within its foreseeable possibilities.

The extension of the contract specifies that the contractor is not given a monopoly or exclusive concession. At the present time, however, the contractor operates the only refrigeration plant in Puntarenas and so in this position is better prepared to take advantage of the expansion that might take place in the industry than would be prospective newcomers in the field. Perhaps in nature of payment for the preferential position the contractor enjoys, he is now under obligation to provide certain services for all fishing boats, whereas heretofore services available through the plant facilities could have been restricted or offered at the discretion or pleasure of the contractor. Also, he is now obliged to provide fuel and other petroleum products required by fishing boats that may call on him for them as well as storage facilities for these products.

That provision of the current extension of the basic contract which permits exceptions from the provisions of the Labor Code as to percentage of Costa Ricans employed (and apparently from percentage of payroll paid them) raises the question of its consonance with provisions of the Labor Code.

The contractor must pay US\$2.00 per ton gross weight on fish or shellfish shipped out of the country from the refrigeration plant. Practically all of such shipments consist of tuna caught by United States fishing boats outside of Costa Rican waters and actually under ownership of the United States boat owners or importers. That tuna is landed at Puntarenas only for refrigeration and shipment to the United States. In effect, therefore, the Government of Costa Rica is assessing an export tax on that tuna which has been temporarily in Costa Rica for processing and transshipment, and a great part if not all of which is of American ownership.

Finally, charges imposed by the renewed contract are specified in United States rather than in Costa Rican currency.

Cuba

PLANS TO MOTORIZE FISHING SCHOONERS: It has reportedly been agreed to motorize some 30 fishing schooners, thereby enabling them to fish outside the nine-mile Mexican territorial waters zone until such time as an agreement on jurisdictional waters is reached. Funds for the motorization of the fleet are to be procured from the newly-created Bank for Agricultural and Industrial Development, a February 2 American Embassy dispatch from Habana states.

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THIRTY DEEP-WATER FISHING VESSELS DISCONTINUE OPERATIONS: The Cuban Cooperative of Fishing Outfitters in mid-December 1950 formally notified the Cuban Ministry of Agriculture that on March 31, 1951, nearly thirty tank boats ("viveros") would discontinue operations. This Cooperative controls a fleet of about 60 deep-water fishing vessels and this action means that half its fleet will remain idle, reports a December 19 American consular dispatch from Habana.

The Cooperative's communication to the Ministry, published in the Habana press of December 16, stated that the fleet of tank boats for the past ten years had been operating under most unfavorable conditions "because the (Cuban) Government has not solved with Mexico the problem of jurisdictional waters and these boats consequently have been prevented from penetrating into the zone of three to nine miles off the Mexican coast." It reported that the boats habitually fished in this area in the past, but since they have not been able to fish in the area in question, the catch has progressively declined. "To the reduction of the catch are added continued extraordinary disbursements caused by repeated detentions of these vessels in Mexico," the Cooperative continued.

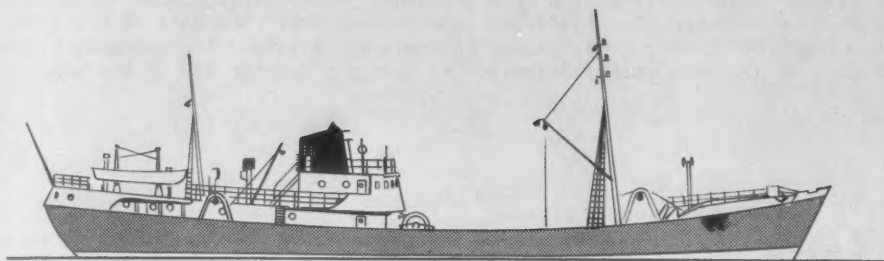
The above decision apparently was taken not only because of losses resulting to the outfitters from the Mexican Government's assertion in 1935 of sovereignty over nine miles of waters off Mexico's coast, but also because the Cuban fleet of tank boats admittedly is largely antiquated, its operation consequently being unprofitable. It is understood that the other half of this Cuban deep-water fishing fleet, consisting of about 30 ice-laden vessels ("neveros"), will continue to operate.



German Federal Republic

FIRST DIESEL-ELECTRIC TRAWLER LAUNCHED: A Bremerhaven fishing company on September 20, 1950, took over the trawler Freiburg-im-Breisach—the first German Diesel-electric trawler. The vessel will be stationed in Cuxhaven and is one of a trio—the sisterships, the Tubingen and the Darmstadt, are now in the construction stage. The first two are Diesel-electrically propelled, whereas the Darmstadt is direct Diesel driven, a September 19 American consular dispatch from Bremerhaven reports.

Propulsion of the Freiburg-im-Breisach is by three single-acting, 6-cylinder, four-stroke-cycle supercharged Diesel engines of 700 shaft h.p. at 110 revolutions per minute. It is 160 feet in length over-all; with a beam of 28 feet, and a draught of 14 feet; measures 449 gross registered metric tons and 180 net registered metric tons. The vessel has a large fish storage capacity—a little less than 268



PROFILE OF THE FIRST GERMAN DIESEL-ELECTRIC TRAWLER--THE FREIBURG-IM-BREISACH. NOTE THE RAKED STEM AND TURTLEBACK FORECASTLE WHICH HAS FOR SOME YEARS BEEN A FEATURE OF THE LARGER TYPES OF GERMAN TRAWLERS. AN UNUSUAL CHARACTERISTIC IS THAT THE STRUCTURE AFT IS BUILT UP INTO A LONG POOP DECK WHICH IS NOW A FEATURE OF MODERN BRITISH MOTOR TRAWLERS.

metric tons or a cubic measurement of 17,390 cu. ft. There is also storage for 18,2 cubic feet of liver oil. The fuel tank has a capacity of 102 metric tons. The vessel is to be manned by a crew of 22 men. On the port side, the superstructure is flush with the hull. There is no open deck along the superstructure as far as the liver-boiling house, allowing the crew to be quartered in the stern. However, fishing can be done only on the starboard side.

The sistership Tubingen is similar to the Freiburg-im-Breisach, but there are some differences in the Darmstadt.

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DEEP-SEA FISHING INDUSTRY, 1950: Fishing Fleet and Leading Port: The West German fishing fleet consisted on January 1, 1951, of 231 fishing trawlers, totaling 95,000 gross registered metric tons, a January 31 American consular dispatch from Hamburg states. This includes the 52 new vessels built during the year and makes allowances for the 34 antiquated trawlers which were retired. Most of the new vessels are said to have been financed with the assistance of foreign capital, while before the war German capital supported the fishing industry almost entirely.

Bremerhaven maintained its position as the leading fishing port in Germany with 121 of the 231 vessels in the fishing fleet operating from that port. Fifty-four vessels were registered in Cuxhaven, 48 in Hamburg, and 8 in Kiel.

Catch: The total catch for 1950 was estimated at 365,400 metric tons as compared with 343,000 tons the preceeding year. This small increase in the catch was not commensurate with the 25 percent increase in catching capacity. This year's herring catch was especially small, totaling only 137,000 metric tons against 173,000 last year. Although higher prices were obtained for fish landed, these are said to have not compensated for increased operating expenses.

Totals given above do not include an estimated 75,000 to 85,000 metric tons of fish landed at the smaller coastal ports which reach only local markets.

Imports and Consumption: Imports of fish during 1950 totalled 113,000 metric tons, valued at about \$15,500,000. Over half of these imports consisted of fresh

herring (74,000 metric tons), with the major portion of the balance being 20,000 metric tons of salt herring. The fact that this year's German catch was little larger than in 1949 and that the total imports were less than half of the 1949 imports of 291,000 metric tons (valued at about \$31 million) indicates that fish consumption in Western Germany decreased by nearly a quarter during the year.



Greece

NEW FISHING RECORD BY GREEK RESEARCH VESSEL: A new fishing record was established in the Aegean Sea by the Greek Government fisheries research vessel Alkyoni, financed under Marshall Plan aid, when 6,000 pounds of fish were caught in a single haul of the net.

The haul was made in northern Aegean waters, the Economic Cooperation Administration reported on January 26. According to all available records, it was the largest single catch made in the Aegean Sea in modern Greek history.

The Alkyoni has been carefully charting fishing possibilities of Greek waters for more than a year. Scientists had suspected the existence of a large fish population far below levels usually fished by commercial fishermen. Locating a new fishing bank with the vessel's depth recorder, the crew lowered their net to about 220 fathoms. The big haul resulted.

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DEVELOPS OYSTER FISHERY: The well-known "Portugais" oyster, long a popular item on French menus, may soon be available on the Greek market, according to an Economic Cooperation Administration news release dated February 9. Early in February 1,540 pounds of the Portuguese-type seed oyster were planted in the oyster beds at Nea Krini, near Salonika, as the first of a series of experiments in producing cheaper and better oysters for Greece.

The seed oyster, brought from Arcachon, France, under the Marshall Plan fisheries program for Greece, will be watched closely by Greek and American fisheries experts. In its home waters, the Portugais is one of the most prolific of European oysters. Better than any present Greek type, and with a much shorter growing period, it should, if successful in Greek waters, permit Greek merchants to offer oysters at considerably lower prices.



Japan

JAPANESE POST-TREATY FISHERIES STATEMENT: In an exchange of letters between United States Ambassador John Foster Dulles and the Japanese Prime Minister Shigeru Yoshida, the Japanese announce that they will voluntarily prohibit their resident nationals and vessels from carrying on fishing operations in presently-conserved fisheries (salmon, halibut, herring, sardine, and tuna fisheries in the waters of the eastern Pacific Ocean and Bering Sea) where conservation measures have already been taken. The letters were dated February 7 and were released in Tokyo on February 13. Copies of the letters follow:

"My Dear Ambassador:

"In connection with conversations which we have had about fisheries, I am glad to advise you as follows:

"The Japanese people largely depend upon fish for their food supply. They have, therefore, a very special interest in the conservation and development of fisheries. The Japanese Government recognize that the problem of conserving and developing fisheries located in the high seas is a difficult one, and that these fisheries may be quickly exhausted unless there is concerted action for the conservation and development of fisheries. We are aware of the fact that certain countries have adopted international agreements and voluntary self denying ordinances to prevent the exhaustion of high seas fisheries which are readily accessible to fishermen of their own country, and that if these conserved fisheries were to be subjected to uncontrolled fishing from other countries, the result would be international friction and the exhaustion of the fisheries themselves.

"Accordingly, the Japanese Government will, as soon as practicable after the restoration to it of full sovereignty, be prepared to enter into negotiations with other countries with a view to establishing equitable arrangements for the development and conservation of fisheries which are accessible to the nationals of Japan and such other countries.

"In the meantime, the Japanese Government will, as a voluntary act, implying no waiver of their international rights, prohibit their resident nationals and vessels from carrying on fishing operations in presently conserved fisheries in all waters where arrangements have already been made, either by international or domestic act, to protect the fisheries from over-harvesting, and in which fisheries Japanese nationals or vessels were not in the year 1940 conducting operations. Among such fisheries would be the salmon, halibut, herring, sardine and tuna fisheries in the waters of the eastern Pacific Ocean and Bering Sea.

"The Japanese Government will set up a commission, composed of representatives of both government and industry, whose duty it shall be to see that the above mentioned prohibition is fully observed, and duly appointed representatives of interested foreign governments will be invited to sit on the commission as observers.

"Any party the Commission finds guilty of violation shall be subject to substantial penalty, including revocation of his fisheries license.

"I trust that the foregoing voluntary arrangements will constitute convincing evidence of the desire of the Japanese Government to deal with this whole problem in an equitable manner, designed to promote good will and the mutual interest of all who, directly or indirectly, depend for their livelihood upon fishing in the high seas.

"I remain with the highest consideration,

"Most sincerely yours,

Shigeru Yoshida Prime Minister."

"My Dear Mister Prime Minister:

"I am in receipt of your letter of February 7 with relation to high seas fisheries. I note with gratification the position of your government as therein set forth.

"It is a good omen for the future that the Japanese Government should already now indicate its willingness voluntarily to take measures for the protection of conserved fisheries.

"The Government of the United States, and I am confident other governments concerned, will be prepared, promptly after the restoration to Japan of full sovereignty by a peace treaty, to enter into negotiations with a view to establishing equitable arrangements for the development and conservation of fisheries which are accessible to the nationals of our countries. I am confident that our government will approach these negotiations in a spirit of good will corresponding to that which motivates your letter to me.

"Sincerely yours,

John Foster Dulles."

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STATEMENT ON JAPANESE FISHERIES ADMINISTRATION: A visiting expert consultant on fisheries, Richard S. Croker, was in Japan the last three months of last year to assist and advise the Supreme Commander for the Allied Powers and Japanese Government officials in the development of a coordinated and unified fisheries administration program.^{1/} Croker, who is Chief of the Bureau of Commercial Fisheries of the California Fish and Game Commission, issued the following press statement on Japanese fisheries administration after his survey, reports the December 23 Weekly Summary of SCAP's Natural Resources Section:

The Japanese fishing industry has made great advances during the past several years. Production of many species is at a high level, and important reforms have been effected. The extent of the industry's recovery during the four years since I left Japan is most gratifying.

However, expansion has brought its problems. The very great increase in the numbers of fishermen and fishing boats has resulted in an overcrowding of the coastal waters and increasingly intensive competition for the available fish. In their efforts to catch the fish before someone else does, growing numbers of fishermen are ignoring the regulations and building new boats even when permits to do so have been refused. They fail to realize that the regulations are enacted to protect the fish so there will be something to catch in years to come.

At the same time, the fisheries departments of the national and prefectural governments have not kept pace with the advance of the industry. Their organization is cumbersome, and liaison between the various bodies is slow or lacking.

The fishing industry is governed by laws enacted by the Diet, by ordinances issued by the Minister of Agriculture and Forestry, and by regulations issued by the prefectural governors. The basic laws have been improved recently, and the Fisheries Law of 1949 is a remarkably fine step forward. However, the ordinances and regulations are out of date and cannot cope with modern conditions. The na-
^{1/} SEE COMMERCIAL FISHERIES REVIEW, DECEMBER 1950, P. 69.

tional Fisheries Agency and many of the prefectural organizations realize this condition and have begun their modernization. They are to be congratulated for making this decision and should be encouraged to press this matter vigorously.

The weakest point in the administration of the fisheries is the absence of an effective method for enforcing compliance with the regulations. Laws, ordinances, regulations, license requirements, and agreements between prefectures are useless unless compliance is required. Unless compliance improves, the fishermen will soon destroy the productivity of the fisheries upon which they depend for their living.

In order to enforce compliance with the requirements an efficient fisheries patrol system is essential. The national Fisheries Agency now has authority under the law to maintain a patrol. However, in order to operate an effective patrol, an enforcement department must be established in this agency. The duties of this fisheries patrol department would be the detection of violations, apprehension of violators, preparation of evidence, and delivery of violators and evidence to the procurators.

For the sake of efficiency and economy, the patrol department should start as a rather small unit, growing as it gains experience. The patrol boats for apprehending violators along the coast and on the fishing banks should be small and fast. For open waters, boats of about 20 meters in length are most suitable. In sheltered waters, high-speed launches of eight meters are best.

The patrol staff of the national Fisheries Agency should be supplemented by similar units in the prefectures to enforce the regulations that concern the local fisheries.

If Japanese fisheries are to continue providing food for the people of the nation, it is imperative that the regulations be enforced strictly. The fisheries patrol system will provide the means for enforcement. If the fisheries patrol department is to succeed, the men who direct and operate it must possess ability, leadership, and courage. Everyone connected with the patrol, from the Director of the national Fisheries Agency down to the newest enforcement officer, must be determined to uphold the law in spite of any pressure that may be brought on him to relax. Only with such leadership and performance can any hope be held for insuring continued fisheries production.



Kenya Protectorate

FIRM TO ATTEMPT FISHING OFF SEYCHELLES ISLANDS: A firm located at Mombasa has acquired the 250-ton steam trawler Derna and will soon try fishing off the Seychelles Islands, according to a February 7 American consular dispatch from that city.

Formerly owned by an East African company, the vessel attempted deep-sea trawling off the East African coast in November 1948. This enterprise was unsuccessful because the trawler was unable to locate remunerative fishing grounds before its owners went bankrupt. For more than a year thereafter, the Derna was anchored at Mombasa until purchased by the present owners.

1/ SEE COMMERCIAL FISHERIES REVIEW, FEBRUARY 1949, PP. 32-4.



In general, the Derna intends to fish hand lines in the Seychelles area, but trawling may also be attempted. This is the same area that the Colonial Development Corporation hopes to exploit from a Seychelles base.

With time and adequate financing the new expedition should succeed. As a side line the Derna expects to catch and also to buy crayfish from the native fishermen for freezing and export to the United States.



Mexico

WEST COAST SHRIMP INDUSTRY HAS GROWTH DIFFICULTIES: The Mexican west coast shrimp fishing and freezing industry, which has enjoyed a boom period of almost phenomenal growth during the past four years, is presently being troubled by a number of production and distribution problems, a January 24 American consular dispatch from Guaymas reports. These include a general fear that the industry has expanded too quickly, the possible failure of some important operators, and a drive by the operators to secure a reduction of Mexican export taxes on shrimp.

The operations of the shrimp fishing fleet have been to a large extent largely financed, especially in the early stages of each season, by credit advanced by freezing plants, merchants, and banks. In turn, the freezing plants have been generously aided by the large distributing firms of the United States who often advance money for buying shrimp, the plants' raw material, and sometimes for all operating expenses.

The most common sequence of this financing system results in the boats delivering their shrimp to the freezing plants in return for 50 to 60 percent of the

prevailing price in cash and a written promise of the plant to settle and pay the balance immediately upon receipt of payment in full for that lot of shrimp from its distributor in the United States. The plants freeze and ship the shrimp to distributors in the United States who pay from 55 to 60 percent of the prevailing wholesale price immediately and promise to pay the balance, less certain expenses and a commission, usually within 40 days after selling the shrimp.

In past years, this system has worked quite satisfactorily. The people in the industry knew approximately when to expect the final liquidations; they made basic credit arrangements for supplies and repairs to allow for this time lag; the partial payments for shrimp delivered allowed them to pay their basic operating costs such as labor, fuel, and administrative expenses; and upon the final sale of the shrimp, the proceeds flowed back through the system to complete the credit cycle.

In the 1950-51 season, the following four factors combined to create the present difficulties of boat and plant operators: (1) during December and early January the shrimp fishermen were not able to find, catch, and deliver the amount of shrimp which experience had taught them to expect in this part of the season (the best available estimates indicate the total catch from December 1, 1950, to January 15, 1951, was about 20 percent less than in the previous season); (2) lower prices in the United States caused distributors to delay selling shrimp caught in October and November and consequently the liquidations of full payment to plants and boat operators for much of the early season catch have not arrived; (3) plant and boat owners invested heavily in boats and equipment in preparation for a record season and have little in the way of reserves to draw upon; and (4) there are at least two more freezing plants on the west coast of Mexico than in previous seasons, and an estimated 20 percent more boats fishing for shrimp.

After initial credits established at the beginning of the season were exhausted, many boat owners had only the partial payments made on shrimp at time of delivery to use for financing the continued operation of their boats. When the catch of shrimp fell off seriously, aggravated by the fact that this smaller catch was split among more boats than operated previous to this season, even the funds normally available to boat owners for running expenses became exceedingly short. The main factors which brought on the present situation, namely, the failure of the shrimp catch to expand in proportion to the investment in boats and plants and what were considered by the operators as relatively poor prices obtainable for frozen shrimp which were and are not subject to the control of the boat and plant operators. Their aggressiveness in expanding their facilities has resulted in their being less able to cope easily with the present crisis. Unless prices and/or the volume of the catch during the remainder of the season is above present expectations, these operators feel that the present season will be a poor one so far as their returns are concerned.

While admitting the above, many operators tend to place a part of the blame for their position on the Mexican export tax levied on frozen shrimp. They are expected to make strong efforts to have this tax lifted, claiming that the tax's primary purpose when imposed (to draw off the windfall profits caused by devaluation of the peso), has been outdated, and that it is a strong deterrent to the growth of an important infant industry.

SPINY LOBSTER EXPORTERS GRANTED SUBSIDY: A subsidy has been granted to Mexican exporters of spiny lobsters by the Mexican Government, a February 12 American Embassy dispatch from Mexico reports. According to the Order (dated January 11, 1951) which appeared in the January 30 Diario Oficial, the subsidy will amount to 75 percent of the 15 percent ad-valorem export surtax imposed by the Mexican Government. To secure this subsidy, exportations must be made through, or with the permission of, the National Bank for the Development of Cooperatives. The subsidy is retroactive to January 1, 1951, and will remain in force to December 31, 1951, subject to reduction should the circumstances warrant it.

The Order states that the subsidy was granted because of the difficulty now being encountered by Mexican exporters in shipping spiny lobsters to foreign markets (mainly the United States) due to competition from the Australian and South African product. Since the increase in production costs and the low price received for Mexican spiny lobsters in foreign markets do not permit the Mexican exporters to cover completely the Mexican surtax of 15 percent ad valorem, the Mexican Government is hopeful that Mexican exporters with this subsidy will be in a better position to compete in foreign markets.

MULLET CLOSED SEASON MODIFIED: The Mexican closed season on mullet (various species of the genus Mugil) was modified by an Order which appeared in the Diario Oficial of January 25, an American Embassy dispatch dated February 6 from Mexico states. Taking of mullet is prohibited from January 16 to February 28 of each year. The Order, which became effective thirty days after its publication in the Diario Oficial, was issued as a conservation measure.

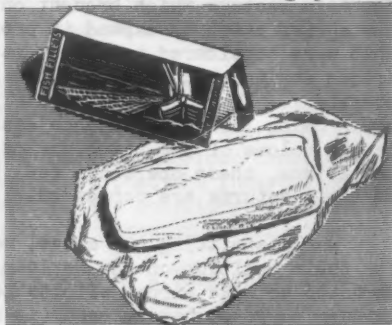


Norway

RESEARCH ON FROZEN FISH: The research division of the Norwegian freezer Laboratory in Bodo (northern Norway) has concentrated on Lofoten cod and large pollock. These two species are the most important in the Norwegian frozen fish industry, according to a report in the December 21 issue of Fiskaren, which quoted the newspaper Tromsø.

During last season's Lofoten fishing operations, the laboratory prepared, packed, and froze a number of samples of cod and pollock taken with various types of gear. Variations in the Lofoten fish were much greater than in species from other areas. It appears that the Lofoten fish are relatively unlike in physiological characteristics. There are striking differences between the males and females.

The seine fishery has played an important part in the frozen fish industry, but tests show that seine-caught cod are not especially well suited as raw material for filleting, even if handled very carefully. Seine-caught fish raise a number of special problems, but changes in seining techniques may make them usable for filleting. Use of smaller seines, which will limit



ONE-POUND PACKAGE OF NORWEGIAN FROZEN FISH FILLETS DESTINED FOR THE SWISS OR FRENCH MARKET.

the catch, may be a solution. Also, fillets of gill-net fish were rough and partly of poor quality.

The Norwegian frozen fish industry has started to use varieties of fish which earlier were of little or no interest. One of these is wolffish (catfish), which is especially suited to filleting and freezing and has opened new possibilities for both fishermen and processors. There is hope of similar development for rosefish (ocean perch), halibut, and haddock.

* * * * *

EVALUATION OF WINTER HERRING FISHERY: Of the total Norwegian fish catch, from 50 to 70 percent is made up of winter herring, according to an article which appeared in the January 27 issue of the Bergen newspaper *Morgenavisen*. Winter herring usually makes up one-third of the market value (value of fish after it has been prepared for sale) of all fish caught. The reason the market value is not as great as would be expected is due to the fact that the catch is so large and the season so short that with the present labor shortage there is insufficient time to prepare it properly in order to secure higher market prices—it is a matter of selling it with as little preparation and handling as possible.

The principal problem of the Norwegian winter herring industry is to get the catch out of the way as quickly as possible after landing and on to home and world markets with a minimum of handling and preparation. During recent years, daily catches of from 36,000–45,000 metric tons have been common, and because of the shortage of labor and shore facilities, the problem of handling these catches appears to be almost insurmountable. Canning is a detailed process and takes considerable time and labor, however, the demand for canned winter herring (kippers) varies to a considerable degree and it has now decreased to the point where production is negligible. The easiest way to prepare fresh herring for sale is to ice it, i.e., pack it in crushed ice. However, iced herring spoils if sent farther south than Boulogne, France—a serious limitation on sales. Freezing appears to be one way of meeting this problem, but this process increases the cost of the fish by almost 50 percent and also changes its physical characteristics, reducing the number of uses to which it can be put. Salted herring will not keep in hot climates and sale is consequently confined to the northern temperate zone where competition is very keen.

The winter herring fishery's safety valve is the tremendous mass which can be used by the herring meal and oil factories. This industry's modern unloading equipment, expanding storage facilities, and increasing ability to utilize a great amount of herring each day is chiefly responsible for the increase in and present importance of winter herring fishing. It is estimated that the herring meal and oil industry uses approximately three-fourths of the total catch.

* * * * *

RECORD SLOE-HERRING CATCH REPORTED OFF WESTERN NORWAY: The 1951 fisheries of sloe herring off western Norway, which came to an end February 15, produced a record catch of 630,000 metric tons—almost 20,000 tons more than last year, the Norwegian Information Service reported on February 22.

First-hand or landed value of this year's sloe-herring catch is estimated at about \$15,400,000.

More than 45,000 tons of the herring will be exported—considerably more than in 1950. Most of the catch (about 470,000 tons) will wind up as meal or oil, while

63,000 tons have been salted for sale to Norwegian consumers. Canning factories have bought 7,000 tons.

* * * * *

NEW GROUNDS FOR SUMMER HERRING FISHING:^{1/} The G. O. Sars, a research vessel operated by the Norwegian Directorate of Fisheries in Bergen, sailed on December 8, 1950, to prove the hypothesis that herring exist in the cold water flowing between Jan Mayen and Iceland and to the south in the direction of the Faeroe Islands, a January 25 American consular dispatch from Bergen reports. This stream also makes a sharp turn in the direction of the Norwegian coast. The vessel, which returned from this trip on January 23, 1951, has found that the hypothesis mentioned above is correct.

Finn Devold, the fishery consultant aboard the vessel, stated that herring was found for the first time on December 12, when they were quite far north and northeast of the Faeroe Islands. Large streams of herring were found in water having a temperature of 3° C.

An article on this trip of the G. O. Sars, which appeared in the January 24 issue of Bergens Arbeiderblad, states that during the summer, herring in the North Atlantic frequent warm waters where there is a good supply of food. The herring becomes very fat, and when their food supply disappears from surface waters in the autumn, they are forced to go through a fasting period which lasts throughout the winter. Herring, while fasting, must seek the coldest water possible in order to make the layer of fat they accumulated during the summer last as long as possible. It appears that this fat breaks down more rapidly when the herring remain in warm waters.

It seems that there is a comparatively small current of cold water flowing northeast of the Faeroe Islands towards the Møre coast (that portion of the Norwegian coast around Aalesund). The vessel found that the herring followed this cold current towards the Norwegian coast and was not to be found either north or south of it. When this cold current was finally absorbed by the warmer Gulf Stream close to the coast, the herring changed their swimming pattern from a rather compact group extending vertically to a depth of approximately 200 meters (650 feet) with a front of some 100 meters (328 feet) to one of only 30 to 40 meters (98-131 feet) in depth and covering a considerable area in the top layer of the Gulf Stream where the coldest water is found.

The "fathometer" on the vessel was suitable for tracing the herring groups in a vertical or almost vertical direction only; this is unsuitable for shallow coastal waters so the herring was lost when it came close to the coast. It is expected that the G. O. Sars will be equipped with a "fathometer" sending out sound waves in a horizontal direction next year in order to be able to trace the herring in shallow water. It was, however, able to trace the herring within 40 nautical miles of land.

The few vessels following directions given by the G. O. Sars caught approximately 1,677 metric tons of herring in one day at sea, far from the usual fish banks, prior to the arrival of the herring in the usual fishing areas.

^{1/} SEE COMMERCIAL FISHERIES REVIEW, JANUARY 1951, P. 68.

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WHALING EXPEDITION TO HUNT SPERM WHALES: A Norwegian whaling expedition was scheduled to leave the first part of February for Peru with eight whale catchers to hunt sperm whales, according to the December 21 issue of Fiskaren, a Norwegian fishery periodical. Manned by 280-290 men, the expedition will be operating for about 9 to 10 months. A portion of the expected production is destined for the United States.

The whale catchers, at the time of this report, were being repaired in Norwegian shipyards; however, the factory ship Anglo-Norse had been repaired in Kiel, Germany, and was reported to have left for Peru.



Peru

REGULATIONS FOR THE IMPORTATION AND SALE OF EDIBLE AQUATIC PRODUCTS: Regulations for the importation and sale of foreign aquatic products as well as for the sale of similar domestic products have been established in Peru by Supreme Resolution No. 2 dated January 29, 1951. This Resolution was published in the official gazette El Peruano of February 7.

The main provisions require that edible aquatic products in any form must be subjected to inspection of, and approval by, the Technological Laboratory of the Peruvian Bureau of Fish and Wildlife, which must extend a quality certificate in every case, reports a February 14 American Embassy dispatch from Lima.

Peruvian customhouses will not permit clearance of products lacking such certificates. Adulterated foreign products will be rejected and subject either to reexportation or confiscation. Domestic products will be likewise confiscated if found unsuitable for consumption. A period of 90 days from the date of the resolution is allowed to local fish-preserving enterprises for the codification of their products in order to identify the origin. Companies which fail to fulfill this requisite will not be permitted to undertake processing activities. Inspections and examinations will be made in conformity with the rules of the Bureau of Fish and Wildlife regarding the control and sanitary condition of edible aquatic products.

The preamble of the resolution states that this measure is taken because it has been found that the quality of certain foreign and domestic-preserved fish and shellfish sold in the Peruvian market is unsuitable for human consumption; that in several cases statements on the labels do not correspond to the contents; that the Technological Laboratory of the Bureau of Fish and Wildlife has the technical personnel and facilities required for such inspection; and that it is the duty of the Government to safeguard the interests and health of the consumers.

* * * * *

NEW FISHERIES LAW SUBMITTED TO LEGISLATURE: A new fisheries law, prepared by a commission representing government, fishermen, and the fishery industry, was submitted to the Peruvian legislature for enactment on December 6, 1950. Reports received from the Director of Fisheries indicate that it is very possible that this legislation will be enacted without any drastic changes, states a January 29 American consular dispatch from Lima.

¹OFFICIALS OF THE BUREAU OF FISH AND WILDLIFE REPORT THAT "CODIFICATION" MEANS THE SERIAL NUMBER, DATE, AND TIME OF ELABORATION, AND THAT THIS IS REQUIRED FOR THE PURPOSE OF FACILITATING FINDINGS IN CASE OF POOR QUALITY LOTS.

In its present form, the new fisheries law is reported to be entirely satisfactory to those American firms already operating in the Peruvian fishery industry. Every facility appears to be offered by the new law to protect and develop this phase of the Peruvian economy by both Peruvian and foreign capital.



Portugal

SARDINE INDUSTRY CONFRONTED WITH SERIOUS TIN PLATE SHORTAGE: Shortages of tin plate continue to be a serious problem for the Portuguese sardine industry, according to a January 18 American consular dispatch from Lisbon.

The sardine industry had sufficient tin plate to meet its requirements for the current season which ended about January 15, but was completely bare of stocks for the new season which starts about May 1. Efforts to purchase tin plate in the United States continued unsuccessfully, but there were hopes that it might become available from Belgium, where a new tin plate mill was expected to come into production in February.

ARTIFICIAL DRYING PLANT FOR FISH: Portugal's first artificial drying plant for cod was inaugurated at Alcochete, across the river from Lisbon, on January 27. The artificial-drying fish plant, built from Portuguese-Italian patents, uses conditioned air distributed by large electric fans, reports a February 2 American consular dispatch from Lisbon. The plant has a capacity of 21 metric tons of cod, and the process takes 36 hours. In addition, there is an area to be used for sun-drying, when the weather permits, with a capacity of 240 metric tons. The plant also has a refrigerated storage space for salted cod awaiting drying with a capacity of 3,600 metric tons.



Spain

FISHERIES REVIEW FOR 1949: Introduction: The activities of the Spanish fishing industry during 1949, while better than in the previous year, were still far from satisfactory, states a December 14 American consular dispatch from Vigo. However, the removal of government controls during the second half of the year and the lifting of ceiling prices on the sale of fish for a temporary period were very helpful to the industry in offsetting increased operation costs.

Fuel supplies for the fleet, which for years has been one of the main problems of the industry, improved substantially during 1949, especially for coal-burning ships, since adequate stocks of English and Spanish coal were made available. The supply of adequate fishing equipment, however, continued unfavorable. Spanish substitutes, in addition to being of poor quality, were not readily obtainable thus forcing the trade to go into the free market for replacements, which were much more expensive.

Type and Size of Fleet: Well informed and reliable trade sources estimate the Spanish fishing fleet to number about 37,500 units of all types (250,000 gross

registered metric tons). However, according to a semi-official trade paper España Pesquera (January 1950) published by the National Fishing Syndicate, the number of fishing craft as of January 1, 1950, was 38,241 with a gross tonnage of 224,324, and a declared total value of 1,038 million pesetas (approximately \$94,795,000).

The fleet operates out of numerous ports scattered along the Spanish littoral, but the focal point of the deep-sea fishing industry is centered in the northern and northwestern sections of Spain, between the French and the Portuguese borders, where the three principal fishing ports of the country, Vigo, Pasajes de San Juan, and La Coruna, are located. The combined fishing craft of these two regions are reported to represent over 50 percent of the total Spanish fishing fleet.

The wide variety of small steamers, motorboats, row boats, and sailing vessels which are used for fishing along the coast and protected waters, constitute, by far, the largest percentage of the units and tonnage.

Many important improvements have been developed during recent years in the construction and propulsion of fishing vessels and at present a substantial number of the deep-sea fishing fleet is made up of steel craft with Diesel engines, displacing from 150 to 250 metric tons. But coal-burning craft, with wooden hulls, still outnumber steel ships.

While the opinion is repeatedly expressed that many of the difficulties confronting the Spanish fishing industry are the result of an over-sized fleet, impartial appraisers state that rather than the size of the fleet, the old fishing methods, the deteriorated condition of equipment, and the old and expensively operated coal-burning ships are responsible for the situation.

Fishing Grounds: The Purcupine banks (near Ireland), the Grand and Petit Soles, the coast near La Rochelle in the north, and the waters between the Canary Islands and the African coast in the south comprise the main areas for deep-sea fishing, which is an important item in the fresh fish industry. However, the scarcity of fish that has been developing since 1947 in these waters, which since 1929 were the normal fishing grounds of the offshore fleet, forced operators to leave these grounds for the banks off Iceland and Newfoundland during the last half of 1949. Catches brought in from the latter, being abundant and remunerative, helped to cushion the poor returns of the first half of the year. The operation of the fleet in such distant waters, however, required the refitting of the ships and since the industry was not able to undertake such additional costs, operations in those grounds were limited to the larger steel craft.

The coast of Africa and the South Atlantic coast of Spain are the areas where tuna and some specimens of the cod family are caught.

The north coast of Spain, and the coast of Portugal supply nearly all sardines and other preservable varieties, as well as a large number of species for fresh consumption. In addition to the catches by the fleet, there is a fair volume of fish which is caught from the shore with nets.

Catches: While total catches for 1949 increased 4.4 percent over the previous year (table 1), they were 1.9 percent below 1947. The fishing grounds in which the fleet usually operated commenced to show the first signs of depletion early in 1949, resulting from intensive dragging and the killing of immature specimens. Catches in 1949 were 6.2 percent below 1946, which was the peak year of the Spanish fishing industry in the past decade. The increase in the 1949 production was due almost entirely to the larger cod catches. Almost without exception the catches

Table 1 - Spanish Fisheries Production
(Quantity and Landed Value), 1940 and 1946-9

	Quantity	Value	
	1,000 lbs.	1,000 Pesetas	1,000 U.S. \$
1949:			
Fish.....	1,117,149	1,925,454	175,840
Crustaceans...	38,782	133,765	12,216
Mollusks.....	70,084	103,262	9,430
Total....	1,226,015	2,162,481	197,486
1948:			
Fish.....	1,092,467	1,645,851	150,306
Crustaceans...	34,368	130,931	11,957
Mollusks.....	47,962	90,580	8,272
Total....	1,174,797	1,867,362	170,535
1947.....	1,249,251	2,032,046	185,575
1946.....	1,307,412	1,715,951	156,708
1940.....	951,811	725,788	66,282

of all other species upon which the greater part of the fishing fleet depends were smaller than in 1948.

Catches Utilized Mainly For Human Consumption: With the exception of about 30 percent of the catches which are normally absorbed by the canning and pickling industries, the output of the fishing industry is consumed through

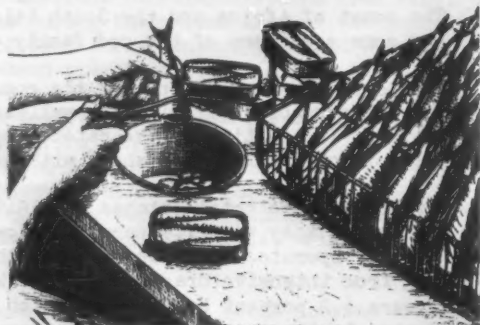
the fresh fish markets of the country.

Byproducts Industry:^{1/} The Spanish fishing fleet does not operate for processing purposes other than canning, pickling, and salting. Occasionally, however, particularly during the summer months, because of the low prices that prevail due to large catches of jurel, some of these catches are diverted to fish-meal production. The Spanish byproducts industry must depend for its raw materials on the residue of the canning plants. There are in Spain 42 fish byproducts plants with an average output of 27,739 metric tons per year, valued at 85,878,677 pesetas (about \$7,843,000). The output of this industry, which employs about 332 persons, is as follows (in metric tons): fish oil, 13,280; fish meal, 13,928; other fish byproducts, 500.

Composition of Catches: As may be seen from table 2, notwithstanding the disappearance of sardines from its former breeding grounds along the coast, this species, which is the main source of revenue for the coastal fishing craft, continued to lead all others followed by small hake and cod. The last two species are brought in by the larger vessels engaged in offshore fishing.

Fish Canning Industry: The critical situation in which the Spanish fish canning industry found itself in 1949 on account of the raw material shortages stands out clearly when one considers that in 1935, the last normal year for fish canning, 1,501,668 standard cases (clubs, 30 mm.) were shipped abroad as against 355,980 cases for 1949. On the whole, however, canning activities for 1949 were the best since the termination of World War II, and showed an important improvement over 1948. Shortages of raw materials, while still acute, improved during 1949 by the allotment and receipt of larger quantities of Spanish tin plate and especially by the arrival of several

^{1/}SEE COMMERCIAL FISHERIES REVIEW, OCTOBER 1950, PP. 66-8.



PRODUCTION LINE IN SPANISH SARDINE CANNERY--WOMEN TAKE FISH FROM SPECIAL SHAPED WIRE BASKETS, CUT TO CONVENIENT SIZE, AND PACK IN CANS. FISH ARE PLACED IN THE BASKETS DIRECTLY FROM THE BRINE TANK.

Table 2 - Spanish Fisheries Production by Species (Quantity and Landed Value), 1948-9

Species	1949			1948		
	Quantity	V a l u e		Quantity	V a l u e	
	1,000 lbs.	1,000 Pesetas	1,000 U.S.\$	1,000 lbs.	1,000 Pesetas	1,000 U.S.\$
Fish:						
Sardines.....	147,668	253,407	23,142	167,483	234,648	21,429
Anchovies.....	79,897	86,565	7,905	97,283	90,861	8,298
Bonito and tuna..	65,474	169,692	15,497	40,711	107,946	9,858
Hake.....	59,488	256,208	23,398	63,522	235,947	21,547
Small hake.....	100,810	262,616	23,983	115,258	273,188	24,949
Cod.....	138,668	103,028	9,409	113,204	63,321	5,783
Other.....	525,144	793,938	72,506	495,006	639,940	58,442
Total.....	1,117,149	1,925,454	175,840	1,092,467	1,645,851	150,306
Crustaceans:						
Lobster.....	1,409	9,817	896	650	7,935	725
Barnacles.....	969	2,820	258	1,242	3,401	310
Crab.....	754	2,940	268	671	2,517	230
Langostino.....	5,399	33,207	3,033	5,803	33,733	3,081
Giant shrimp.....	23,324	70,134	6,405	21,781	70,282	6,418
Shrimp.....	114	570	52	269	1,137	104
Other.....	6,813	14,277	1,304	3,952	11,926	1,089
Total.....	38,782	133,765	12,216	34,368	130,931	11,957
Mollusks:						
Squid.....	5,939	24,731	2,258	8,944	32,112	2,933
Cuttlefish.....	12,350	26,612	2,430	8,571	21,345	1,949
Octopus.....	10,113	19,421	1,774	9,063	16,362	1,494
Clams.....	30,673	17,081	1,560	15,658	11,113	1,015
Mussels.....	5,869	8,285	757	3,000	4,933	451
Razor clams.....	442	529	48	54	68	6
Oysters.....	872	390	36	521	263	24
Other.....	3,826	6,213	567	2,151	4,384	400
Total.....	70,084	103,262	9,430	47,962	90,580	8,272
Grand Total.....	1,226,015	2,162,481	197,486	1,174,797	1,867,362	170,535

1/ Includes only production by regular cod-fishing fleet, and not catches of smaller vessels which are included in "other."

small but substantial shipments of American tin plate. The latter shipments permitted exports of canned fish to the United States that could not otherwise have been made since Spanish tin plate (because of its lack of uniformity of calibration, excess of lead content, and other technicalities) does not meet the standard requirements of the United States and other foreign markets.

The establishment of the more favorable export rate of Pesetas 21.90 per \$1.00 and permission to retain 13 percent of the foreign exchange received by packers for their exports, which could be freely invested in the purchase of materials and equipment, was also an incentive for the resumption of packing operations. In addition to enabling packers to renew contacts with former buyers and markets from which they had been isolated for a number of years, because of their inability to compete at the high prices resulting from conversion at the fictitious rate of exchange applied to exports by the Spanish government, the small balances of foreign exchange created by the more favorable rate enabled packers to place orders, although small, for some of the more essential raw materials, such as tin plate and rubber, thus permitting the industry to operate at a higher output than before.

In addition to the shortages of raw materials, another problem pressing the industry was that of reducing costs of production which were necessarily high because of low output, thereby placing the cost of the finished product completely out of reach of foreign markets. While the industry's claims for the removal of controls and application of a more favorable export rate received more sympathetic

consideration by the government during the year under discussion and in general operated under better conditions than in the previous year, it still had a long way to go before it approached its prewar level. First of all it needed financial revitalization, the longer period of idleness having practically exhausted its ready capital and forced it to operate on bank credit.

Exports: Table 3 shows the quantities of canned fish that have been exported from Spain for the past twenty years. The gap between 1937 and 1942 (Spanish Civil War and World War II years) covers a period during which there was an embargo on exports, the total production during that period having been consumed in the national markets in substitution for other food products not then available.

Table 3 - Spanish Exports of Canned, Salted, Smoked, and Frozen Fish, 1931-5 and 1942-9

Year	Sardines in Oil		Other Fish in Oil		Total Canned Fish ^{1/}		Salted, Smoked, and Frozen Fish	
	Cases	Lbs.	Cases	Lbs.	Cases	Lbs.	Cases	Lbs.
1949	240,772	9,534,594	115,208	5,069,183	355,980	14,603,776	53,830	4,737,081
1948	176,311	6,981,968	131,673	5,504,099	307,984	12,486,067	24,950	2,195,431
1947	135,720	5,374,512	159,659	6,673,757	295,379	12,048,269	95,822	8,432,369
1946	186,109	7,347,846	75,414	3,150,367	261,523	10,498,213	14,901	1,311,200
1945	99,246	3,930,300	187,530	7,836,726	286,776	11,767,026	39,665	3,402,740
1944	34,099	1,350,360	47,837	1,999,666	81,936	3,350,026	9,349	822,800
1943	90,233	3,573,240	59,269	2,479,605	149,502	6,052,845	288,318	25,372,160
1942	133,400	5,282,640	157,698	6,591,781	291,098	11,874,421	132,414	11,650,540
1935	1,175,691	47,877,500	325,977	13,626,138	1,501,668	61,503,638	37,759	3,322,880
1934	1,136,104	44,990,000	388,665	16,246,285	1,524,769	61,236,286	41,275	3,631,980
1933	930,656	36,854,400	431,595	18,041,045	1,362,251	54,895,445	75,697	6,661,380
1932	896,703	35,509,980	622,407	26,017,097	1,519,110	61,527,077	93,075	8,195,440
1931	1,129,340	44,722,260	825,489	34,505,504	1,954,829	79,227,764	107,809	9,487,720

^{1/} WHILE EXPORTS OF CANNED FISH COMPRISE A VARIETY OF SPECIES, THEY CONSIST PRINCIPALLY OF SARDINES, ALBACORE, AND ANCHOVIES IN OIL.

Spain's exports of preserved fishery products in 1949 totaled 19,340,858 pounds, valued at 26,100,785 gold pesetas (U. S. \$8,527,126). United States imports of these products comprised 31 percent of the quantity and 25 percent of the value. Exports to the United States of canned sardines made up 60 percent of the total quantity and 63 percent of the value.

The United States is the most important export market for Spanish canned sardines, followed by Italy, the United Kingdom, and Brazil. For all other canned fish, Italy is the leading importer, followed by Switzerland, France, Egypt, and Cuba. For salted, smoked, and frozen fishery products, Spain's best customer is the United Kingdom, followed by Brazil, Italy, Portugal, Argentina, and the United States.

Total Spanish exports to the United States of preserved fishery products amounted to 6,003,498 pounds, valued at 6,651,011 gold pesetas (U. S. \$2,172,885). Of this total, 5,746,305 pounds, valued at 6,389,646 gold pesetas (U. S. \$2,087,497) consisted of sardines in oil; 135,388 pounds, valued at 192,387 gold pesetas (U. S. \$62,853) of other canned fish in oil; 121,805 pounds, valued at 68,978 gold pesetas (U. S. \$22,535) of salted, smoked, and frozen fishery products.

NOTE: VALUES IN U. S. DOLLARS BASED ON 10.95 PESETAS EQUAL U. S. \$1.00 AND 1 GOLD PESETA EQUALS U. S. \$0.3267.



United Kingdom

WHITE-FISH SUBSIDY CONTINUED: The subsidy^{1/} granted by the British Government to catchers of white fish in the inshore, near, and middle waters (inaugurated in July 1950 for six months, ending January 30, 1951) has been extended another six months, reports the January 27 issue of The Fishing News, a British fishery periodical. - This interim subsidy was originally initiated to secure improvement for the white-fish industry until the White-Fish Authority would be able to apply long-term remedies. In addition, it is meant to encourage the catchers of prime fish to maintain supplies of the better types of fish.

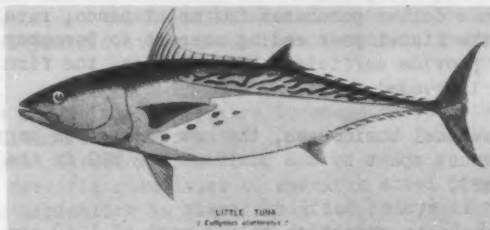
Certain changes were made in the scale of payments for vessels over 70 feet in length, but there were no changes in the rates payable to inshore fishermen with boats not exceeding 70 feet in length—10d per stone (about 82 cents per hundredweight) for fish sold other than at retail, reduced to 8d per stone (66 cents per hundredweight) for most varieties if landed round. As originally administered, the subsidy will not be payable to vessels of 140 feet and over. As a condition of receiving the subsidy during the extended period, owners of vessels fishing in the near and middle waters will have to furnish the Ministry of Agriculture and Fisheries or the Scottish Home Department by the end of April with detailed accounts of the operations of their vessels for the year 1950.

The maximum subsidy payment varies from £10 (about \$28) to £12 (\$33.60) per day at sea or from £100 (\$280) to £168 (\$470.40) for the voyage, and also varying according to the gross earnings of each voyage, the type and size of vessel, and the fishing grounds. No subsidy is payable if gross earnings (including subsidy) reach or exceed either £45-90 (\$126-252) per day at sea or £450-1,260 (\$1,260-3,528) for the voyage, depending on the type and size of the vessel.

^{1/} SEE COMMERCIAL FISHERIES REVIEW, AUGUST 1950, PP. 59-60.



"LITTLE TUNA" OF THE ATLANTIC AND GULF COASTS

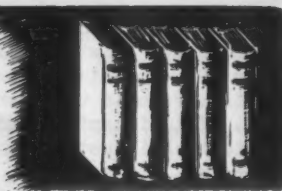


Recent developments offer some encouragement for the commercial canning of "little tuna," Euthynnus alletteratus, along the Atlantic and the Gulf Coasts. For many years this fish has been caught in varying amounts in these areas. From Cape Cod to the Florida Coast, and also along the Gulf, the little tuna has been reported in abundance at certain seasons of the year. It has also been reported to be in fair abundance in various parts of the Caribbean Sea.

—Fishery Leaflet 353



FEDERAL ACTIONS



Department of Commerce

NATIONAL PRODUCTION AUTHORITY^{1/}

MAINTENANCE, REPAIR, AND OPERATING SUPPLIES ORDER ISSUED: Civilian industries and institutions are granted the right to use a priority rating to procure equipment and supplies for maintenance, repair, and operation (MRO) of their present facilities by Regulation 4 issued on February 27 by the National Production Authority.

Regulation 4 (February 27, 1951): The MRO program provided for in this regulation is permissive in character. No one is required to use the ratings assigned to purchase his MRO supplies, but if he does so, he becomes bound by the limitations of the regulation.

The regulation permits application of the rating, identified as DO-97, by business concerns and other institutions without individual authorization by NPA. The rating may be used solely to acquire maintenance, repair, and operating supplies and may not be used to purchase production material (i.e. material or components to be incorporated in end products) nor to purchase major capital items. The rating is equal to all other DO ratings and is fully extendible. Ratings are applied in accordance with the provisions of NPA Regulation 2.

If a concern elects to use a DO-97 rating even on a single occasion, it must then limit its MRO purchases in accordance with Regulation 4.

Under the regulation, MRO purchases are limited in any one calendar quarter to one-fourth of the firm's dollar purchases for maintenance, repair, and operating purposes in 1950 (or the fiscal year ending nearest to December 31, 1950). If this quota is too small to provide sufficient MRO supplies, the firm may file with NPA an application for an increased quota.

To provide for seasonal businesses, the new regulation permits quarterly MRO quotas equal to the amount spent by the business for MRO in the corresponding quarter of 1950 (or fiscal year).

Businesses which were in operation only a part of 1950 are permitted a quota in proportion to the amount they spent for MRO while they were in operation, with reasonable adjustments for seasonal and other variable factors. New firms started after December 31, 1950, are permitted to acquire for MRO purposes the minimum amounts necessary for operation, up to \$5,000 a quarter. They must obtain special NPA authorization for MRO expenditures above this amount. When the quarterly quotas for these businesses exceed \$1,000, the NPA must be informed in writing of the base period used, the reasons for selecting it, and what adjustments have been made.

^{1/}COPIES OF REGULATIONS, NOTICES, PRESS RELEASES, ETC., ISSUED BY THE NPA ARE AVAILABLE FROM THE NATIONAL PRODUCTION AUTHORITY, DEPARTMENT OF COMMERCE, WASHINGTON 25, D. C., OR FROM DEPARTMENT OF COMMERCE FIELD OFFICES.

Small businesses are permitted to extend DO-97 ratings for MRO purchases up to \$1,000 a quarter, without regard to the quota restrictions. All other firms making MRO purchases under DO-97 ratings are required to follow the procedures established in the regulation for figuring their quotas.

In all cases where DO-97 ratings are used to procure MRO supplies, the firm is required to charge against its MRO quota purchases made without use of the rating.

Direction 1 (February 27, 1951): To provide for the orderly transition to the MRO program, NPA also issued a direction (Direction 1 to Reg. 4) governing MRO procurement during the remainder of the first quarter of 1951.

Regulation 2 as Amended and Interpretation No. 1 (February 27, 1951): This order states the basic rules of the priorities system to be administered by the National Production Authority in the Department of Commerce. It states what kind of orders are rated orders, how to place them, and the preference status of such orders. These rules apply to all business transactions within the jurisdiction of NPA.

* * * * *

PROVIDES FOR REPAIR AND CONVERSION OF SEAGOING VESSELS: Steel products will be provided during April through June this year for delivery to United States shipyards for the repair and conversion of seagoing vessels, the National Production Authority announced on February 16 in issuing Supplement 4 to Order M-1 (Repair and Conversion of Seagoing Vessels).

Under the terms of Supplement 4 to M-1, persons engaged in the repair and conversion of seagoing vessels may apply to MPA for an authorization to issue certified orders for specific tonnages of specific steel products for shipment in the months of April, May, and June 1951 and, if authorized by NPA, may place certified orders for such specific products.

While the major part of the allowed tonnage has already been allotted to named yards participating in the Repair and Conversion Program, a reserve has been set aside for small unnamed yards. Shipyards engaged in the repair and conversion of seagoing vessels who are experiencing difficulty in obtaining steel may apply by letter, in triplicate, to the Maritime Administration, Division of Maintenance and Repair. A detailed justification should be presented, including the following information:

1. Type and volume of repairs to seagoing vessels the yard has customarily performed.
2. Present inventory position.
3. The specific quantities of specific steel products for which authorization to place certified orders is requested for shipment in the months of April, May, and June 1951. Quantities and specifications should be set forth fully just as they would be shown on a purchase order.

The quantities requested must be minimum quantities actually required and should be limited to such basic shapes and forms as are carried by a steel warehouse.

* * * * *

FURTHER RESTRICTIONS ON USE OF ALUMINUM: Stepped up military requirements for aluminum require greater savings in civilian uses, the National Production Authority announced February 3.

To effect the savings needed to meet the increased defense demands, NPA announced these steps:

1. Rules for handling defense orders for aluminum under the priorities system are revised (M-5, Amend. 1) to require aluminum producers and fabricators to accept a larger percentage of defense rated (DO) orders. There is no change in the percentage of DO orders distributors and jobbers must accept, and the 60-day "lead time" provision of the previous order is also continued.
2. The aluminum conservation order is amended (M-7, Amend. 2) to provide the necessary savings in civilian uses. The revised order lists more than 200 less essential items in which aluminum may not be used after April 1. It does not permit the use of aluminum in the manufacture of decorative or ornamental items, or the use of more or better grade aluminum than is necessary for the functional operation of any item. In addition, the revised order continues the previously announced aluminum use limitations of 75 percent in February and 65 percent in March of the average monthly use during the first half of 1950.

NPA explained that although aluminum production was expanded greatly during World War II and further expansions are underway, the present rapid acceleration of the mobilization program requires that larger supplies of aluminum be made available for defense purposes in the second quarter of this year.

Inevitable dislocations will occur in certain industries, under the new controls, NPA said. The action was taken only after very careful review, however, and is necessary to assure sufficient aluminum for defense and essential defense-supporting needs.

Provision is made for appeals in cases where an undue and exceptional hardship, not suffered by others in the same trade or industry, occurs.

NPA Order M-7, Amend. 2 provides that:

1. Effective April 1 aluminum cannot be used in the manufacture or assembly of more than 200 items. The list includes the following items of interest to the fishing and allied industries:

Cans, including ignition coil and motion picture humidor.
Kitchen utensils and tools, and food processing equipment
(except cooking and baking utensils)

Marine construction:

Boats: pleasure boats and fittings of all kinds

Canoes

Rowboats

Sailboats

Foil for:

Capsules

Over wraps (except food)

Pleasure boat fastenings, fittings and hardware

2. Effective April 1 the use of more or better grade aluminum than is necessary for the functional operation of any item is prohibited.

3. Effective June 1 aluminum cannot be used in the manufacture of any item to be used solely for decorative or ornamental purposes.

However, the items on List A of this order may be completed if they were in the process of manufacture on or before March 31, and completed by May 31. Items on the list which are completed by May 31 may be sold after that date.

* * * * *

SUFFICIENT TIN TO CAN PERISHABLE FOODS PROMISED: Assistance in obtaining sufficient pig tin for packaging foods was requested by the representatives of the tin plate industry on February 15 from the National Production Authority.

NPA informed the industry advisory committee that sufficient tin would be made available to can all perishable foods, but that it might be necessary to further reduce the amounts of tin available for less essential purposes.

The present tin plate and terneplate order requires certification of all non-defense use of tin plate and terneplate. The metal can order permits the unrestricted packing of perishable foods, but reduces the weight of tin coating on all cans wherever possible. Some non-food products, and beer and pet foods, are allowed to pack 90 percent of their first quarter 1950 or first quarter 1949 base in tin cans.

Reference was made to new developments in plating procedures, such as a process recently initiated in one plant to reduce the tin coating on the outside of the container. Wide use of such processes, however, will depend on the success of the initial experiments, industry said.

The committee recommended that NPA require consumers to certify, at the time of purchase, the end product in which the tin plate will be used. It also expressed concern over the possibility of losing skilled workers who would be difficult to replace.

NPA officials cited figures indicating that some 26 million hot-dip plated containers will be required this year, 25 million of which will be used to pack food. They said more than 42 million are expected to be electro-plated and about 17 million will be made of black plate.

* * * * *

SHORTAGE OF GLASS CONTAINERS AND CARTONS FORECAST: Members of the Glass Containers Manufacturers Industry Advisory Committee informed the National Production Authority on February 1 that the need for glass containers created by the shift from critical defense materials is taxing their present productive capacity.

Committee members said that a lack of basic materials is retarding an increase in the production of jars, bottles, and other glass containers now in demand because of steel, tin, and other metal shortages.

They said that the shortage of paper for cartons is beginning to be felt by the industry, and they feared the situation would become worse.

NPA appointed a task group to study glass container simplification techniques, which the industry said would boost production rates. Officials said a paper conservation and salvage system is being considered, which if adopted, would make more carton stock available. Industry members said that paper conservation is important, and that they are taking steps to save paper wherever possible.

* * * * *

TIGHT COOPERAGE INDUSTRY FACED WITH SCARCITY OF PRODUCTION MATERIALS: Members of the Tight Cooperage Industry Advisory Committee on February 9 discussed with the National Production Authority problems which may develop in their industry as the use of other containers is curtailed to conserve critical materials for the defense effort.

Committee members said they are faced with a scarcity of barrel staves and headings (tops) and steel for hoops. They explained that lack of demand for staves last year forced wood mills to cut back production. For this reason, they added, most barrel makers are now operating below capacity.

Industry representatives told NPA they are studying substitution but pointed out that their products can be used to supplement use of steel and other containers.

NPA appointed a six-man task group to study production bottlenecks and standardization of barrels and their components.



Economic Stabilization Agency OFFICE OF PRICE STABILIZATION

RETAIL CEILING PRICE REGULATION 7 DOES NOT INCLUDE FOODS: Certain retail items were brought under a "margin" type of price control on February 28 by the Office of Price Stabilization. Major retail items not affected by Ceiling Price Regulation 7 are food, beverages, fuel, building supplies and hardware, and a number of other items.

This regulation is the first of a series designed to replace the General Ceiling Price Regulation,¹ the freeze order of January 26, 1951, with an effective price control system for stabilizing the economy, according to the Office of Price Stabilization.

¹/SEE COMMERCIAL FISHERIES REVIEW, FEBRUARY 1951, P. 85.

* * * * *

"HIGHEST PRICE" PROVISION OF GENERAL PRICE CEILING REGULATION AMENDED: In order to reduce the prices of some manufacturers and wholesalers, who were taking advantage of isolated sales before the freeze to establish abnormally high ceiling prices for their goods and services, the Director of Price Stabilization on February 23 issued Amendment 2 to the General Price Ceiling Regulation. The amendment also corrects certain pricing distortions which have arisen as a result of the freeze, and clarifies certain sections of the original order.

Under the general freeze order of January 26, sellers' prices were set at the highest price they "delivered" goods and services during the base period of December 19, 1950, to January 25, 1951, to the same class of purchaser. Some manufacturers and wholesalers have claimed ceilings at substantially higher prices than those which they were generally charging in the base period because of a few isolated sales.

To remove inequities among sellers' the GCPR has been amended so that the "highest price" provision will apply only to sales which amounted to 10 percent or more of all deliveries to a class of purchasers during the base period. In other words, prices charged in fewer than 10 percent of all deliveries to a class of customers during the base period will not serve as a legal basis for ceiling prices.

The amendatory provisions of Amendment 2 (dated February 23, 1951) to General Ceiling Price Regulation follow:

AMENDATORY PROVISIONS

The General Ceiling Price Regulation is amended in the following respects:

1. Section 3 is amended to read as follows:

Sec. 3. General ceiling prices—(a) Ceiling prices for all sellers for commodities or services sold in base period. Your ceiling price for sale of a commodity or service is the highest price at which you delivered it during the base period to a purchaser of the same class. If you did not deliver the commodity or service during the base period, your ceiling price is the highest price at which you offered it for base period delivery to a purchaser of the same class. The offer must have been made in writing, but in the case of a retailer may have been made by display. If you are a manufacturer or a wholesaler, you cannot, unless permitted by paragraph (b) (1) of this section use a price as your ceiling price to a class of purchaser unless you made at least 10 percent of your total deliveries during the base period to that class of purchaser at that price.

(b) General increases by manufacturers and wholesalers. If you are a manufacturer or wholesaler of a commodity, you may apply the following provisions in determining your ceiling prices.

visions in determining your ceiling prices.

(i) General increases to all of a class of purchasers. If, during the base period, you announced in writing and put into effect a price increase for a class of purchaser by making all deliveries to that class for the remainder of the base period at the higher price (except deliveries pursuant to firm commitments made before the price increase), the increased price becomes your ceiling price for that class of purchaser, even though less than 10 percent of your base period deliveries to that class were made at the higher price.

(ii) General increases to several classes of purchasers. If, during the base period, you announced in writing a general increase for sales to more than one class of purchasers and if you made deliveries which, under the preceding paragraphs of this section, established the increased price or prices as the ceilings to all purchasers of one or more classes and if those classes accounted during the year 1950 for at least 30 percent of your dollar sales of the commodity, then the announced increased prices are your ceiling prices for all classes of purchasers for whom increases were announced.

(iii) General increases on several items. If during the base period you announced in writing a price increase on a list of commodities, and if you made deliveries which, under the preceding paragraphs of this section, established the increased price or prices as the ceilings to all classes of purchasers of one or more of the commodities covered by the price list, and if those commodities accounted during the year 1950 for at least 30 percent of your dollar sales of the commodities covered by the price list, then the price list prices are your ceiling prices for all the items on the list.

2. Section 22 is amended by striking out of the definition of the word "Seller" the words "at retail"; by striking out of the definition of the word "Commodity" the words "and contracts to buy, sell or deliver any of the foregoing"; and by striking out of the definition of the word "Service" the words "and contracts to sell or supply such service."

(Sec. 704, Pub. Law 774, 81st Cong. Interpret or apply Title IV, Pub. Law 774, 81st Cong.: E. O. 10161, Sept. 9, 1950, 15 F. R. 6105)

This amendment shall become effective the 28th day of February 1951.

MICHAEL V. DiSALLE,
Director of Price Stabilization.

This amendment became effective on March 7.

* * * * *

ADDITIONAL DISTRICT OFFICES: The opening of 29 additional district offices was planned for February and March, the Office of Price Stabilization announced on February 6.

These will be in addition to 42 district offices which already have been opened in the 14 OPS regions.

The opening of the 21 district offices on or about February 19 were to be located in Springfield, Mass.; Rochester, N. Y.; New York, N. Y.; Trenton, N. J.; Erie, Pa.; Raleigh, N. C.; Nashville, Tenn.; Montgomery, Ala.; Miami, Fla.; Toledo, Ohio; Columbus, Ohio; Grand Rapids, Mich.; Peoria, Ill.; Green Bay, Wis.; St. Paul, Minn.; San Antonio, Texas; Fort Worth, Texas; Shreveport, La.; Tulsa, Okla.; Oakland, Calif.; and Spokane, Wash.

The opening of the 8 other district offices planned on or about March 5 were to be located in Syracuse, N. Y.; Camden, N. J.; Norfolk, Va.; Savannah, Ga.; Springfield, Ill.; Duluth, Minn.; Lubbock, Texas; and San Diego, Calif.

WAGE STABILIZATION BOARD

SEVERAL CLARIFYING REGULATIONS ISSUED AFFECTING WAGES AND SALARIES: The Wage Stabilization Board of the Economic Stabilization Agency in discharge of its responsibilities under the provisions of the Defense Production Act of 1950, Executive

Order 10161, General Order No. 3, and General Wage Stabilization Regulation 1 of the Economic Stabilization Administrator, has issued several General Regulations regarding the stabilization of wages and salaries.

General Regulation No. 1, issued on January 30, is a statement of the adoption by the Board of General Wage Stabilization Regulation 1.

General Regulation No. 2, issued on January 30, reports in part that "Collective bargaining conferences, arbitration proceedings and other proceedings directed to the resolution of wage questions were in progress prior to January 25, 1951, the effective date of General Wage Stabilization Regulation 1. In some instances collective bargaining agreements were reached, wage determinations made and awards issued prior to the effective date of that regulation. In the interest of furthering and maintaining sound working relations including collective bargaining and avoiding the imposition of inequities and hardships it is necessary and desirable to recognize and give effect to such agreements, determinations and awards applicable to work performed within a relatively short period of time after January 25, 1951, without prior approval of the Wage Stabilization Board." Approval of this regulation by the Board was not unanimous and a dissenting opinion was released on January 31 by the three industry members of the Board.

General Regulation No. 3 issued on January 31 is an authorization for "increases in wages, salaries, and other compensation to bring such wages, salaries and other compensation into compliance with the Fair Labor Standards Act of 1938, as amended, and such other statutes and orders establishing minimum rates of compensation."

General Regulation No. 4 issued on January 31 applies to increases in wages, salaries, and other compensation of state, county, municipal and other non-federal governmental employees, whose wages, salaries, and other compensation are fixed by statute, ordinance, or regulation of duly constituted authorities of such governmental bodies. Prior authorization of the Board, subject to certain provisions, is not required for these increases.

NOTE: COPIES OF THESE GENERAL REGULATIONS ARE AVAILABLE FROM THE ECONOMIC STABILIZATION AGENCY, WASHINGTON 25, D. C.



Federal Trade Commission

AMENDS STIPULATIONS REGARDING USE OF WORD "LOBSTER": The unqualified word "lobster" may not be used in advertising to describe any species of food fish other than that properly known as lobster (the macrurous crustacean of the genus *Homarus*), but the common names "Spiny Lobster" and "Rock Lobster" may be used to describe a species of the crawfish (*Panulirus interruptus*) if the word "spiny" or the word "rock" appears in direct connection with the word "lobster" and in type of equal size and prominence.

This was the purport of two amended stipulations accepted by the Federal Trade Commission from Hudgins Fish Co., West Palm Beach, Fla., and East Coast Fisheries, Inc., Miami, Fla.

Previously the Commission had approved stipulations whereby the firms agreed not to use the word "lobster" as descriptive of any food fish other than the true lobster unless the term "lobster" was accompanied by "appropriate language identifying the species or locality of such product."

The amended stipulations were approved by the Commission in accordance with its policy of encouraging law observance through cooperation in certain types of cases where there has been no intent to defraud or mislead.



Department of State

POINT FOUR AGREEMENT WITH PAKISTAN INCLUDES CONSTRUCTION OF A FISH HARBOR:

Pakistan and the United States on February 9 concluded a General Point Four Agreement, the Department of State announced. The signing took place in Karachi. Three other South Asian nations--India, Ceylon, and Nepal--have already signed agreements providing for cooperation under President Truman's Point IV Program.

Like the General Agreements previously concluded with Middle Eastern, African, Latin-American, and other South Asian countries, the Pakistan agreement sets forth the basic terms of cooperation and paves the way for specific project agreements.

At the present time the Pakistan Government has 92 development projects under active consideration, many of which have already received final approval. Included among these is the construction of a fish harbor at Karachi.



Eighty-Second Congress (First Session)

FEBRUARY 1951

Listed below are public bills and resolutions introduced and referred to committees, or passed by the Eighty-Second Congress (First Session) and signed by the President, that affect in any way the fisheries and allied industries. Public bills and resolutions are shown in this section only when introduced and, if passed when they are signed by the President. The more pertinent reports, hearings, or chamber actions on some of the bills shown in this section from month to month are also listed.

BILLS AND RESOLUTIONS INTRODUCED:

Columbia River Waters Apportionment: H. R. 2470 (D'Ewart) - A bill granting the consent of Congress to the States of Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming to negotiate and enter into a compact for the disposition, allocation, diversion, and apportionment of the waters of the Columbia River and its tributaries, and for other purposes; to the Committee on Interior and Insular Affairs.

Facilities to Protect Federal Resources Affected by Dam Projects: S. 989 (Murray) - A bill to provide for the installation of improvements and facilities needed for the protection, development, and utilization of Federal resources affected by dam and water reservoir projects constructed by the Federal Government, and for other purposes; to the Committee on Interior and Insular Affairs.

Fishery Products Distribution: H. R. 2482 (Kennedy) - A bill to further encourage the distribution of fishery products, and for other purposes; to the Committee on Merchant Marine and Fisheries.

Food Prices: H. R. 2333 (Yorty) - A bill to amend the Defense Production Act of 1950 so as to authorize the President to control food prices under that act to the same extent as other commodities; to the Committee on Banking and Currency.

Foreign Trade Agreements "Peril Points": H. R. 2194 (Scudder) - A bill to provide for the determination of "peril points" with respect to foreign trade agreements, for the taking of action to incorporate an "escape clause" in existing and future foreign trade agreements, and for other purposes; to the Committee on Ways and Means.

Great Lakes Sea Lampreys Investigations Appropriations: H. R. 2995 (Potter) - A bill to amend the joint resolution of August 8, 1946, as amended, with respect to appropriations authorized for the conduct of investigations and studies (Great Lakes sea lampreys) thereunder; to the Committee on Merchant Marine and Fisheries.

Japanese Fishing Vessels: Memorial of the Legislature of the Territory of Alaska was presented to the

House, relating to their senate joint resolution No. 1 urging that in the peace treaty with Japan there be included a provision prohibiting Japanese fishing vessels from engaging in fishing in certain waters of the Pacific coast; to the Committee on Foreign Affairs.

Navigation Laws: H. R. 2641 (Hart) - A bill to revise, consolidate, and codify the navigation laws relating to admeasurement, documentation, entry, clearance, coastwise trade, foreign trade, and United States fisheries, and for other purposes; to the Committee on Merchant Marine and Fisheries.

Price and Wage Roll-Back to June 25, 1950: H. R. 2615 (Mansfield) - A bill to roll prices and wages back to the June 25, 1950, level and to impose a 100-percent tax on excess profits; to the Committee on Ways and Means.

Water Pollution Control: H. R. 2752 (Simpson of Pennsylvania) - A bill to encourage the prevention of water pollution by allowing the amounts paid for in-

dustrial waste treatment works to be amortized at an accelerated rate for income-tax purposes; to the Committee on Ways and Means.

CHAMBER ACTION-HOUSE:

Trade Agreements Extension: Passed by voice vote, H. R. 1612, to extend for 3 years, the authority of the President under section 350 of the Tariff Act of 1930 to enter into foreign-trade agreements. A motion to recommit the bill was rejected by a voice vote. Prior to passage a peril-point amendment was adopted providing for congressional notification by the President prior to any reduction of tariffs below a level determined by the Tariff Commission to be a peril point. Adopted an amendment barring extension of any tariff reductions or trade concessions to Russia and Soviet-dominated countries, as a result of any trade agreements hereafter entered into. Adopted an escape-clause amendment designed to provide a simple procedure whereby industries injured by tariff reductions can get relief upon appeal to Tariff Commission.



THE MEXICAN FISHERIES INDUSTRY

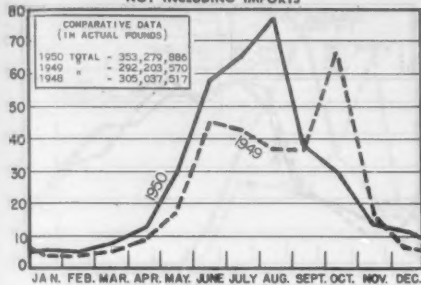
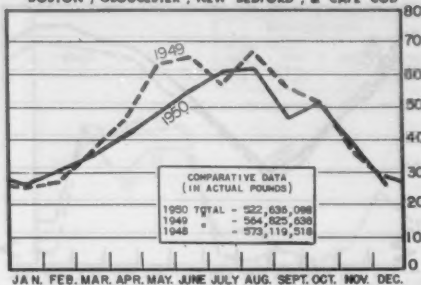
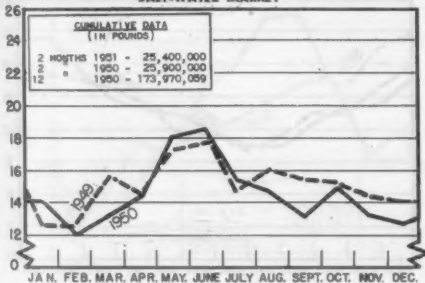
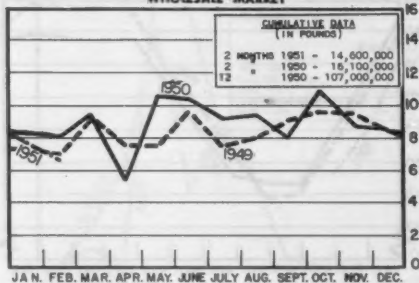
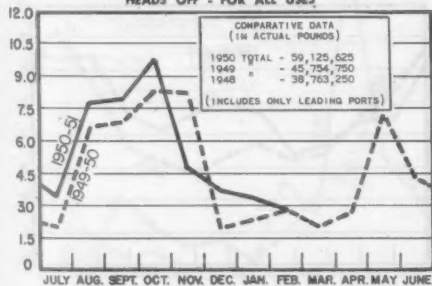
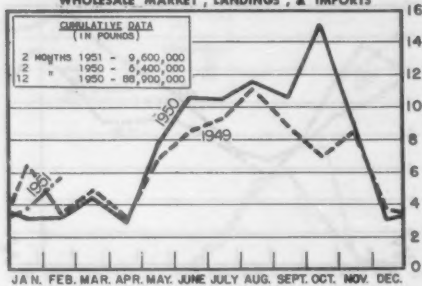
The next most important fishery in Mexican waters and the most important from the Mexican industry standpoint is that for shrimp. The Pacific area at present most heavily fished is in the Gulf of California between San Felipe, Baja California, and Altata, Sinaloa. This section represents the principal shrimp fishery of the Republic. Other shrimp grounds not now being heavily fished lie between Mazatlan and Cape Corrientes and between Salina Cruz and the Guatemalan border.

On the Gulf of Mexico the heaviest concentration of shrimp is found in the Campeche-Tabasco area. The shrimp catch in this region is large, while there is more limited shrimp fishing along the coast of Veracruz and Tamaulipas in the Gulf of Mexico. Indications are that both the shrimp fishery in the Gulf of California and that off the coast of Tabasco and western Campeche have already reached their maximum productivity and that the future production in these areas will depend upon the variation in the annual productivity of the shrimp. There are no other known areas along the Mexican coast that even approach the potentiality for shrimp production of the Gulf of California and the Campeche areas.

--Fishery Leaflet 339

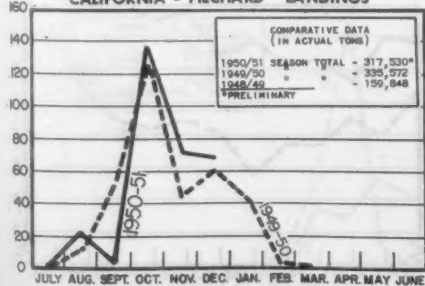
LANDINGS AND RECEIPTS

In Millions of Pounds

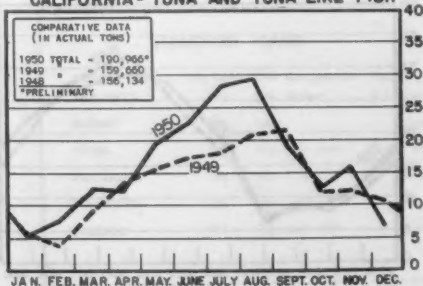
MAINE - LANDINGS
NOT INCLUDING IMPORTSMASSACHUSETTS - LANDINGS
BOSTON, GLOUCESTER, NEW BEDFORD, & CAPE CODNEW YORK CITY-RECEIPTS OF FRESH & FROZEN FISH
SALT-WATER MARKETCHICAGO - RECEIPTS OF FRESH & FROZEN FISH
WHOLESALE MARKETGULF - SHRIMP LANDINGS
HEADS OFF - FOR ALL USESSEATTLE - RECEIPTS OF FRESH & FROZEN FISH
WHOLESALE MARKET, LANDINGS, & IMPORTS

In Thousands of Tons

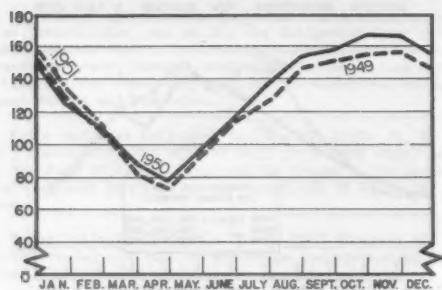
CALIFORNIA - PILCHARD LANDINGS



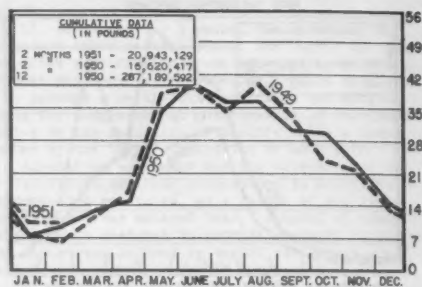
CALIFORNIA - TUNA AND TUNA-LIKE FISH



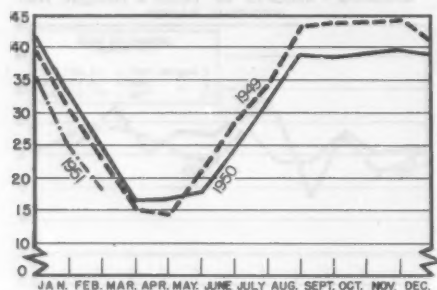
COLD STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS

In Millions of Pounds
U.S. & ALASKA - HOLDINGS OF FROZEN FISH

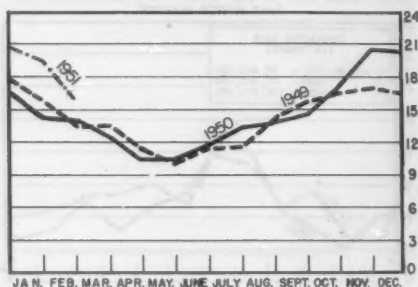
U.S. & ALASKA - FREEZINGS



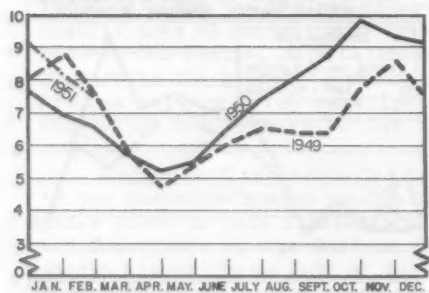
NEW ENGLAND - HOLDINGS OF FROZEN FISH



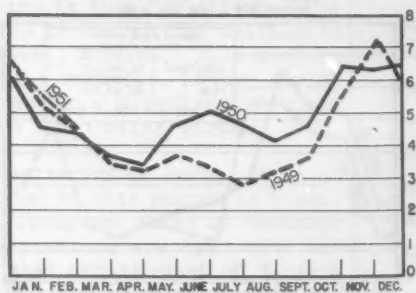
NEW YORK CITY - HOLDINGS OF FROZEN FISH



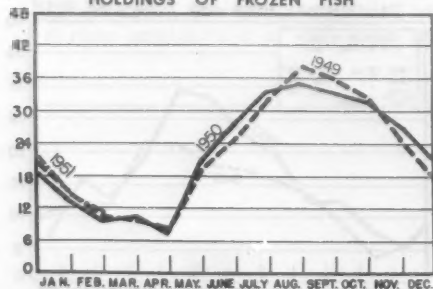
CHICAGO - HOLDINGS OF FROZEN FISH



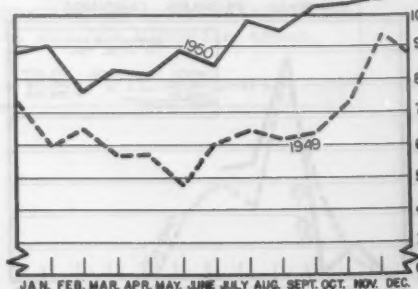
GULF - HOLDINGS OF FROZEN FISH



WASHINGTON, OREGON, AND ALASKA - HOLDINGS OF FROZEN FISH



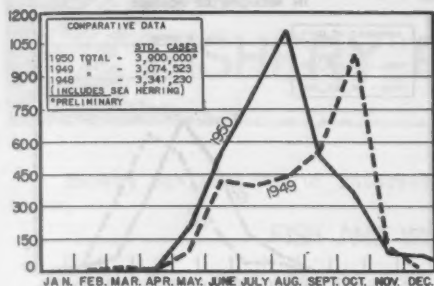
CALIFORNIA - HOLDINGS OF FROZEN FISH



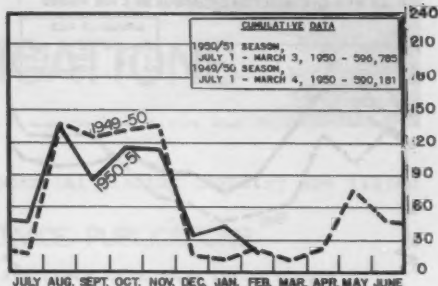
CANNED FISHERY PRODUCTS

In Thousands of Standard Cases

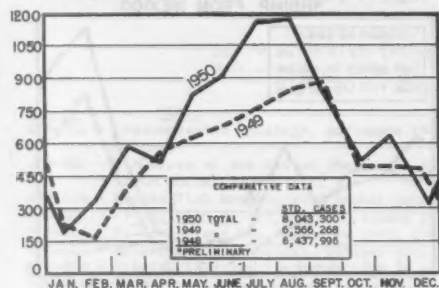
MAINE - SARDINES, ESTIMATED PACK



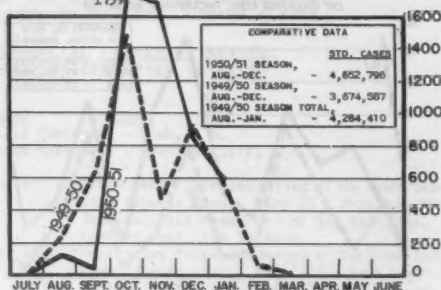
UNITED STATES - SHRIMP



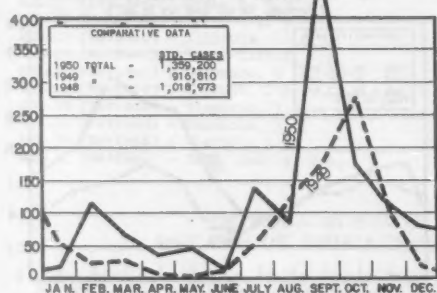
CALIFORNIA - TUNA AND TUNA-LIKE FISH



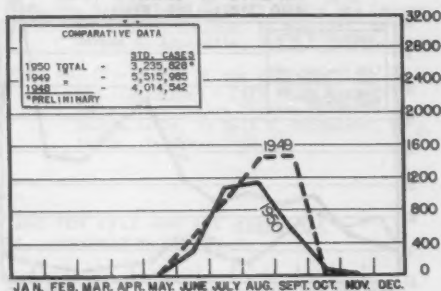
CALIFORNIA - PILCHARDS



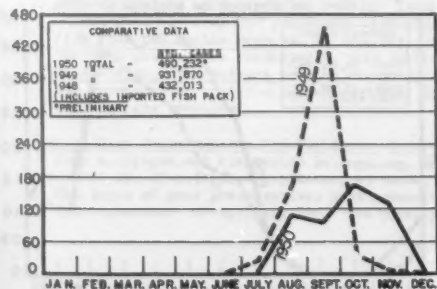
CALIFORNIA - MACKEREL



ALASKA - SALMON



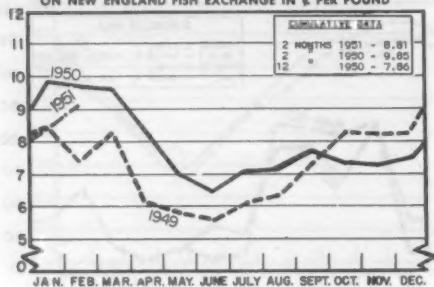
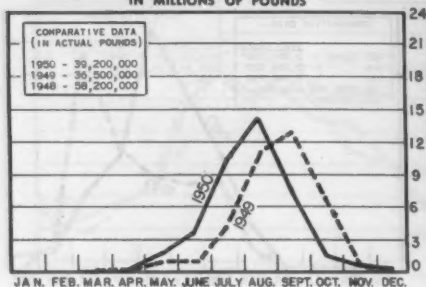
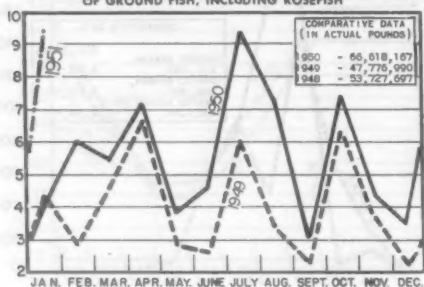
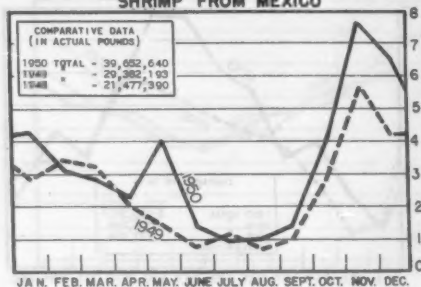
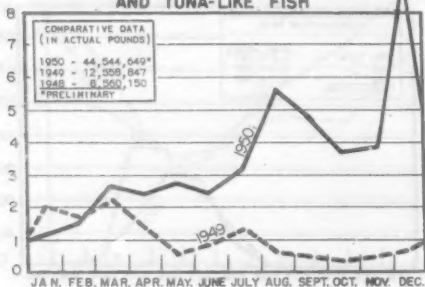
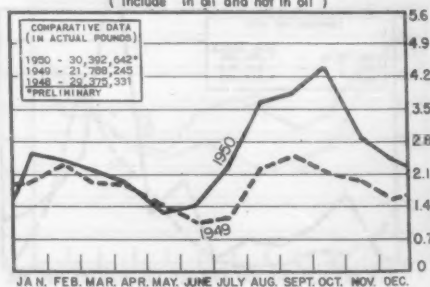
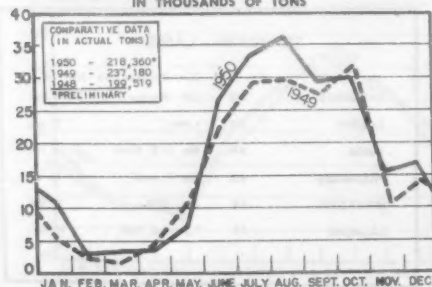
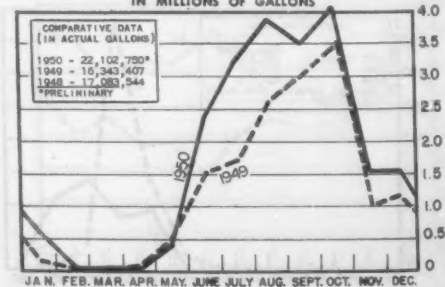
WASHINGTON - PUGET SOUND SALMON

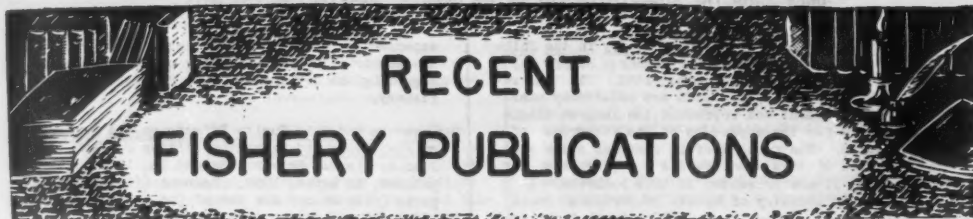


STANDARD CASES

Variety	No. Cans	Can Designation	Net. Wgt.
SARDINES	100	1/4 drawn	3 1/4 oz.
SHRIMP	48	—	5 oz.
TUNA	48	No. 1/2 tuna	7 oz.
PILCHARDS	48	No. 1 oval	15 oz.
MACKEREL	48	No. 300	15 oz.
SALMON	48	1-pound full	16 oz.

PRICES, IMPORTS and BY-PRODUCTS

BOSTON - WEIGHTED AVERAGE PRICE
ON NEW ENGLAND FISH EXCHANGE IN ¢ PER POUNDMAINE - IMPORTS OF FRESH SEA HERRING
IN MILLIONS OF POUNDSU.S. - IMPORTS OF FRESH & FROZEN FILLETS
OF GROUND FISH, INCLUDING ROSEFISHU.S. - IMPORTS OF FRESH AND FROZEN
SHRIMP FROM MEXICOU.S. - IMPORTS OF CANNED TUNA
AND TUNA-LIKE FISHU.S. - IMPORTS OF CANNED SARDINES
(Include in oil and not in oil)U.S. & ALASKA - PRODUCTION OF FISH MEAL
IN THOUSANDS OF TONSU.S. & ALASKA - PRODUCTION OF FISH OIL
IN MILLIONS OF GALLONS



RECENT FISHERY PUBLICATIONS

Recent publications of interest to the commercial fishing industry are listed below.

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
MDL - MARKET DEVELOPMENT SECTION LISTS OF DEALERS, LOCKER PLANTS, ASSOCIATIONS, ETC.
SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
SSR.-FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).

Number	Title
CFS-601	- Massachusetts Landings, September 1950, 14 p.
CFS-604	- Fisheries of the United States and Alaska, 1948 Annual Summary, 14 p.
CFS-606	- Frozen Fish Report, 1950 Annual Summary, 14 p.
CFS-607	- Frozen Fish Report, Final, January 1951, 10 p.
CFS-610	- Fish Meal and Oil, December 1950, 2 p.
CFS-611	- Massachusetts Landings, October 1950, 14 p.
CFS-613	- Florida Landings, December 1950, 4 p.
CFS-618	- Maine Landings, December 1950, 4 p.

Refrigerated Locker Plants:

MDL-3 (Revised)	- Tennessee, 4 p.
MDL-7 (Revised)	- Indiana, 9 p.
MDL-17 (Revised)	- Kansas, 12 p.
MDL-20 (Revised)	- Illinois, 13 p.
MDL-23 (Revised)	- Rhode Island, 1 p.
MDL-26 (Revised)	- Colorado, 6 p.
MDL-28 (Revised)	- Vermont, 2 p.
MDL-29 (Revised)	- Virginia, 3 p.
MDL-36 (Revised)	- Arkansas, 3 p.
MDL-39 (Revised)	- Florida, 2 p.
MDL-44 (Revised)	- South Dakota, 7 p.

Number	Title
MDL-45 (Revised)	- Utah, 4 p.
MDL-46 (Revised)	- West Virginia, 1 p.

- Sep. 270 - Preliminary Fisheries Survey of the Hawaiian-Line Islands Area, Part II - Notes on the Tuna and Bait Resources of the Hawaiian, Leeward, and Line Islands.
Sep. 271 - Preliminary Fisheries Survey of the Hawaiian-Line Islands Area, Part III - The Live-Bait Skipjack Fishery of the Hawaiian Islands.
Sep. 272 - Effect of Fluctuating Storage Temperatures on Quality of Frozen Fillets.

SSR-Fish. No. 55 - Natural History of the Sea Lamprey (PETROMYZON MARINUS) in Michigan, by Vernon C. Applegate, 259 p., December 1950.

SSR-Fish. No. 57 - Survey of the Columbia River and its Tributaries - Part VIII, Area VII - Snake River, above Payette River to upper Salmon Falls, by Zell E. Parkhurst, 19 p. illus., December 1950.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Bacteriological Studies of Philippine Fishery Products, by John A. Clague and Crisanto Almaric, Research Report 27, 12 p., printed, 10 cents, 1950. To obtain information on the bacteriological quality of Philippine fishery products, tests were made on oysters and overlying waters from oyster farms, and on fresh and processed fish and shellfish from the Manila markets in the Philippines. The data gathered is presented in this publication. In addition, the authors present recommendations for improving the bacteriological quality of Philippine fishery products.

Fishing Gear Preservatives for Philippine Waters, by John A. Clague and Bienvenido Detingaling, Research Report 22, 23 p., illus., printed, 15 cents, 1950. The types of gear preservatives most commonly used and the method of applying them are briefly discussed in this publication. Also included are results of tests on the relative value of preservatives when used on gear submerged in Philippine waters. Comparative costs of the various treatments are shown.

Liver Oil Properties of Philippine Sharks and Rays, by William S. Hamm, Research Report 23, 5 p., printed, 10 cents, 1950. The Philippine Fishery Program obtained numerous samples of shark and other fish livers to assay as potential sources of vitamin A. While this assay work was underway, certain other physical and chemical properties of shark oils were also determined on as many samples as time permitted and these data are presented in this report. These values are of interest if the oils are to be used for industrial purposes.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE
ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Outlook for Development of a Tuna Industry in the Philippines, by Herbert E. Warfel, Research Report 28, 40 p., illus., printed, 20 cents, 1950. The tuna resources of the Philippine seas are relatively unexploited at present and represent the largest single opportunity for the expansion of the fisheries of that nation. The results of 2½ years of study and exploration of this resource and the prospects for developing it are presented in this bulletin. A tuna-canning industry of modest proportions could be established, using the long line-trawl technique to capture the fish. Limitations of the supply of bait fishes preclude extensive development of live-bait fishing. American tuna-fishing techniques have not been successful in the Philippines to date and are probably too expensive, since Philippine waters are probably less than one-half as productive as those of the eastern Pacific. Included in this report is a discussion of the Philippine tunas; the history of the Philippine tuna fishery; recent exploration for tuna (including live-bait fishing experiments, long-line trawl experiments, trolling

experiments, and the trap fishery); and production. The author also gives a number of recommendations regarding the development of a Philippine tuna fishery.

Temperature and Salt Purity Effects on the Manufacture of Fish Paste and Sauce, by William S. Hamm and John A. Clague, Research Report 24, 13 p., illus., printed, 10 cents, 1950. Bagoong (fish paste) and patis (fish sauce) are two of the primary preserved fish products prepared in the Philippines. Similar products are prepared in other countries of southeast Asia. The Philippine Fishery Program experimented with the manufacture of these products under various controlled conditions in order to investigate the possibility of reducing costs by accelerating the aging process. The investigation included a study of some bacteriological, chemical, and physical changes which occur in the mixture during fermentation and storage. The results of these experiments and investigations are presented in this bulletin.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE AGENCIES ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE AGENCIES OR PUBLISHERS MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

"An Easy Method of Separating King and Silver Salmon," by Fred B. Hagerman, article, *California Fish and Game*, January 1951, vol. 37, no. 1, pp. 53-4, illus., printed. Division of Fish and Game, State Fisheries Laboratory, Terminal Island Station, San Pedro, Calif. Explains a simple efficient method of distinguishing between the king salmon (*Oncorhynchus tshawytscha*) and the silver salmon (*Oncorhynchus kisutch*).

"An Investigation of the California Sand Dab, *Citharichthys sordidus* (Girard)," by Harbans Lall Arora, article, *California Fish and Game*, January 1951, vol. 37, no. 1, pp. 3-42, illus., printed. Division of Fish and Game, State Fisheries Laboratory, Terminal Island Station, San Pedro, Calif. An investigation of the California sand dab (*Citharichthys sordidus*) is presented in this report. The general morphology and systematic characters of the species are described on the basis of the literature and from material obtained from Monterey Bay and the fishing grounds off San Francisco. Included is a discussion of methods employed, maturation and spawning period, age and growth, age and size at first maturity, length-weight relationship, relationship between total and standard length, and a description of the species.

Annual Report of the Secretary of the Interior (Fiscal Year Ended June 30, 1950), 438 p., printed, indexed, \$1.00. U. S. Department of the Interior, Washington, D. C. (For sale by the Superintendent of Documents, Washington, D. C.) Contains the annual reports of the various agencies of the Department of the Interior, including the Fish and Wildlife Service. Included in the latter report are summaries of the various activities of the Service. Specifically covered are the Pacific Oceanic Fishery Investigations; utilizing the fishery resources (which includes the activities of the Branch of Commercial Fisheries); administration of Alaska fisheries; research in fishery management (marine, coastal, and inland fisheries); maintaining the inland fisheries; international cooperation in conservation (international conservation agreements, international technical cooperation, and rehabilitation of Philippine fisheries); and administration of Federal statutes for protection of fish and wildlife. The

wildlife activities of the Fish and Wildlife Service are also covered.

Australian Journal of Marine and Freshwater Research, December 1950, vol. 1, no. 2, 115 p., plus plates, illus., printed, 7/6d per issue (approx. 85 cents). Commonwealth Scientific and Industrial Research Organization, 314 Albert Street, East Melbourne, C2, Victoria. Published as a medium for the publication of the results or original investigations on sea, estuarine, and fresh-water fisheries and related subjects. In this issue the following articles appear: The Tasmanian Whitebait, *Lovettia sealii* (Johnston), and the Whitebait Fishery, by M. Blackburn; The Effect of a Period of Increased Legal Minimum Length of Sea Mullet in Western Australia, by J. M. Thomson; Studies on the Age, Growth, and Life History of the Pilchard, *Sardinops neopilchardus* (Steindachner), in Southern and Western Australia, by M. Blackburn; Shell Movements of the Freshwater Mussel, *Hyridella australis* Lam. (Lamellibranchiata), by I. D. Hiscock.

Biennial Report for 1949-1951 of the Fisheries Experimental Commission of Alaska, 8 p., processed. Fishery Products Laboratory, U. S. Fish and Wildlife Service, Netchikan, Alaska. The Fisheries Experimental Commission was created by Territorial law in 1937. The basic aim of the Commission as established by the legislative act is to aid in the development of the unutilized resources of the Territory. This includes the improvement of existing fishery products and processes, the development of new fishery products from existing fisheries, and the development of new fishery industries, especially those which will support the economy of the Territory during the off-season. This report discusses the expenditures and activities of the Commission during the 1949-51 biennium. Included is a report on the cooperative activities with the Fish and Wildlife Service, cooperation with other government agencies, and technological activities (occurrence of toxicity in Alaskan butter clams; freezing and storing Alaska pink salmon fillets; utilization of salmon cannery waste; survey of

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commercial fishery possibilities of the Seward Peninsula and adjacent areas; and a list of the publications issued covering the investigations.

California Cooperative Sardine Research Program (Progress Report 1950), by California Academy of Sciences, California Division of Fish and Game, Scripps Institution of Oceanography, and U. S. Fish and Wildlife Service, 54 p., printed, illus., Marine Research Committee, California Department of Natural Resources, State of California, Pier 47, Foot of Jones Street, San Francisco 11, Calif. This report presents an over-all picture of the California Cooperative Sardine Research Program, which has been under way for almost three years. The aim of the Program is to seek out the underlying principles that govern the Pacific sardine's behavior, availability, and total abundance. Included is a summarization of the work done on this program since its inception through 1950 and a statement of plans for work in 1951.

(ECA) Tenth Report to Congress of the Economic Cooperation Administration (For the quarter ended September 30, 1950), 158 p., illus., printed, 40 cents. Economic Cooperation Administration, Washington, D. C., February 1951. (For sale by Superintendent of Documents, Washington 25, D. C.) Reports on the activities under the Economic Cooperation Act of 1948 as well as the programs of economic aid to Korea and the general area of China. Edible fishery products and whale and fish oils are listed as a group in some of the tables. Included is an appendix summarizing the status of the United States Foreign Relief Program and the U. S. Foreign Aid Program.

Fisheries Research Program of Japan, by Willis H. Rich, Preliminary Study No. 42, 40 p., processed. Natural Resources Section, Supreme Commander for the Allied Powers, Tokyo, Japan, January 1951. (Reports may be purchased only in photostat or microfilm from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.) This is a report prepared by the author while serving as visiting expert consultant in Japan in the Fisheries Division of SCAP's Natural Resources Section. The primary purpose of the study was to aid the Japanese in developing a sound, modern fisheries research program. The first part of this report treats of the general features of the Japanese fisheries research program, including the structure of the program, the nature of research, some current problems (shortage of research manpower; inadequacy of library facilities; need for accurate and adequate statistics; and need for continuing long-term research programs), and a summary of recommendations. The second part examines in detail four important research programs: (1) herring fishery; (2) salmon fishery; (3) inland sea fishery; (4) and trawl fishery of East China Sea. (A short summary of this report appears in the February 1951 issue of Commercial Fisheries Review, pp. 61-2.)

Fiskeri-Beretning for Aret 1949, 170 p., printed in Danish with English foreword. I Kommission Hos G. E. C. Gad, Copenhagen, Denmark, 1950. This report contains detailed statistics on the Danish fisheries for the year of 1949. Included in the report are data on number of fishermen, number of fishing craft, value of fishing vessels, the catch by species, the landed value of the catch, resumes by fisheries, imports and exports of fishery products, and a summary of the trends in the fishery industries.

Laws for the Oyster Farmer, by G. Robert Lunz, Contributions from Beers Bluff Laboratories No. 10, 14 p., printed, illus. Beers Bluff Laboratories, Wadmalaw Island, S. C., January 1951. This is a non-technical summary of the existing South Carolina oyster laws. It covers leases, planting requirements, regulations, taxes and licenses, and restrictive measures. The last part of the pamphlet discusses suggestions for changes in the oyster laws.

Peruvian Fisheries Number, Andean Air Mail & Peruvian Times, Supplement to the Issue of December 1-8, 1950, 84 p., printed, \$7.00 (about 50 U. S. cents). Andean Air Mail & Peruvian Times S. A., Jiron Carabaya 928, Lima, Peru. This is a special supplement devoted to the Peruvian fisheries. Most of the articles are in English and some in Spanish. These are some of the more important articles in English: Peruvian Fishing Industry and the Bureau of Fish and Wildlife; The Hundred Fathom Curve; Canned Peruvian Bonito in the United States; Peruvian Fish Hatcheries; Swordfish Heaven; and Big Shipment of Swordfish Arrives at New York. In addition, there are two lists of Peruvian industrial fishing companies--one alphabetical and one by zones.

Salmon Fisheries of the Coastal Rivers of Oregon South of the Columbia, by John T. Gharrett and John I. Hodges, Contribution No. 13, 31 p., illus. Oregon Fish Commission, Portland, Oregon, December 1950. This report is the first of a series dealing with the fisheries management on rivers south of the Columbia. In addition to a discussion of the past regulation of the fisheries, the booklet discusses each individual species of salmon (chinook, silver, and chum), factors affecting the population, and management programs. In their conclusions, the authors state that "in spite of the progressive restrictions of the commercial river fishery during the past fifty years, the trend of the salmon populations of the coastal rivers has been downward. It is almost impossible to isolate and analyze separately the causes of this decline, and any attempt to saddle one factor with the responsibility is an oversimplification of the facts." The report points out that the stream surveys and other observations indicate that the coastal rivers and their salmon populations are not beyond redemption, and that under proper management can be made to yield annually several times their present production.

Scientific and Common Names Applied to Tunas, Mackerels and Spear Fishes of the World with Notes on Their Geographic Distribution, 246 p., processed. Food and Agriculture Organization of the United Nations, Washington, D. C., December 1950. This is a progress report on the compilation of scientific and common names of important food fishes. The first Conference of the Food and Agriculture Organization held at Quebec in 1945 recommended that a study be made of the names, both common and scientific, of important food fishes of the world with a view to clarifying or at least analyzing some of the difficulties in nomenclature. This present work represents a first step in such a study. Because the tunas, mackerels, and spearfishes include species with wide and varied distribution, and because they are becoming increasingly important as food fish and in world trade, and also because there exists a variety of opinions as to nomenclature or taxonomic position of its members, this group was examined first. This study is in no way an attempt at taxonomic revision but is rather a survey and a compilation of existing information on the names and naming of the species. All names, both

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scientific and common, which occur in the literature referring to the same or very similar species have been extracted and placed together and indexed for quick identification. The authors' notes or quotations from experts in taxonomy in this field are often given in order to point out relationships, or difficulties. The geographic distributions included have been worked out from actual records of occurrence as cited in the literature, and are recorded with their limits for each species or at least closely related species.

Seasonal Patterns of Food Consumption, City Families, 1948
(Based on Food Consumption Surveys of 1948-1949), Special Report No. 3, 19 p., processed. Bureau of Human Nutrition and Home Economics, U. S. Department of Agriculture, Washington 25, D. C., February 1951. Season patterns in food consumption (including fish and shellfish) of United States urban families are presented in this report. The patterns were derived from data on types and quantities of foods consumed by housekeeping families in four cities in diverse sections of the country during various seasons of 1948 and 1949. For the group "meat, poultry, and fish" consumption, as a whole, is stable the year round, but for fish consumption is low in the summer and highest in the winter, the report indicates.

Third Annual Report of the Pacific Marine Fisheries Commission for the Year 1950, (To the Congress of the United States and to the Governors and Legislatures of Washington, Oregon and California), 24 p., printed. Pacific Marine Fisheries Commission, Portland, Oregon. The activities and a short resume of the meetings of the Commission during 1950 are given in this report. Also, there is a short summary of the reports submitted by the participating States and cooperating agencies on the research conducted in 1950 on the following marine species and fisheries: ocean salmon, albacore tuna, sardine (pilchard), soupfin shark, sablefish (black cod), and the otter trawl fishery.

Trade Lists

The Commercial Intelligence Branch, Office of International Trade, U. S. Department of Commerce, has published the following mimeographed trade lists. Copies of these lists may be obtained by firms in the United States from that office or from Department of Commerce field offices at \$1.00 per list.

Canneries - Argentina, 8 p. (December 1950); lists, among others, firms canning fishery products. Name, address, products handled, and, in some cases, size of firm are indicated.

Frozen Foods - Processors and Exporters--Denmark, 3 p. (January 1951); lists the names, addresses, and size of about 10 firms processing and exporting frozen fishery products.

Oils (Animal, Fish, and Vegetable) Importers, Dealers, Producers, and Refiners, Argentina, 11 p., (January 1951); lists the names and addresses, products handled, and size of Argentina producers of and dealers in animal, fish, and vegetable oils.

Oils (Animal, Fish, and Vegetable) Importers, Dealers, Producers, Refiners and Exporters--Brazil, 56 p., (January 1951); lists the names and addresses, products handled, and size of Brazilian producers of and dealers in animal, fish, and vegetable oils. Includes a few dealers in fish oils, mainly importers.

Oils (Animal, Fish, and Vegetable) Importers, Dealers, Producers, Refiners, and Exporters--The Netherlands, 20 p., (February 1951); lists the names and addresses, products handled, and size of producers of and dealers in animal, fish, and vegetable oils in The Netherlands.



PACKAGING FROZEN FISHERY PRODUCTS

New packages and methods of packaging can help in merchandising frozen fishery products. Self service makes it easier for the consumer to decide for himself which product he will choose. Quality of product and the use of attractive packages and informative labeling can aid materially in furnishing the customer the required incentives for purchasing.

With the development of improved packaging and freezing techniques will come the expansion of markets for fishery products. These products can be frozen when supplies are plentiful and held until needed by the consumer. By packaging and quick freezing immediately, they are preserved at their peak of quality.

—Fishery Leaflet 324

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ALBACORE TUNA EXPLORATION IN ALASKAN AND ADJACENT WATERS--1949

To study further the range of the albacore tuna and to explore the possibilities of establishing a commercial fishery for this tuna off the Alaskan coast, the

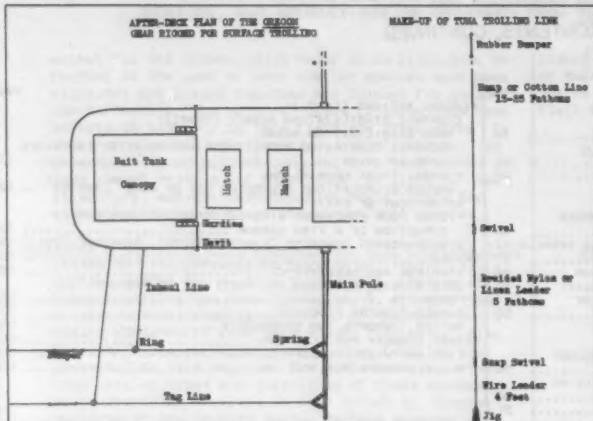


DIAGRAM OF TROLLING GEAR USED BY THE OREGON

Exploratory Fishing and Gear Development Section of the Branch of Commercial Fisheries, U. S. Fish and Wildlife Service, used the 100-foot all-steel tuna clipper Oregon out of Seattle in the summer and autumn of 1949. Fishery Leaflet 376, Albacore Tuna Exploration in Alaskan and Adjacent Waters--1949, is a report of this operation.

Included in this 33-page leaflet is a discussion of the history of the West Coast albacore fishery; the purpose and plan of the Oregon's exploration; abundance and location of albacore; effectiveness of gear

used; water temperatures; size of albacore; analysis of albacore food; use of live bait and its problems; and tuna indicators.

The 1949 exploration, discussed in this report, undertaken with the view of studying albacore movements in the northeastern Pacific and the possibility of establishing a tuna fishery in Alaskan waters, represents only a small beginning, and much more exploration must be carried on over a period of years before any definite picture of tuna migration can be formed. The Oregon took albacore over several seamounts, and future work may shed light on the possibility of accumulation of tuna in these areas. Oceanographic data collected furnishes some reason for believing that commercial quantities of albacore may be present in Alaskan waters at certain times, but this needs verification.

NOTE: DATA ON 1950 ALBACORE TUNA EXPLORATIONS IN ALASKAN AND ADJACENT WATERS BY THE JOHN H. COBB, A FISH AND WILDLIFE SERVICE EXPLORATORY VESSEL, WILL BE PUBLISHED IN THE NEAR FUTURE.

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